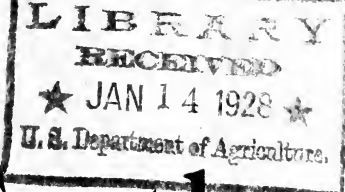


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Book of Truth

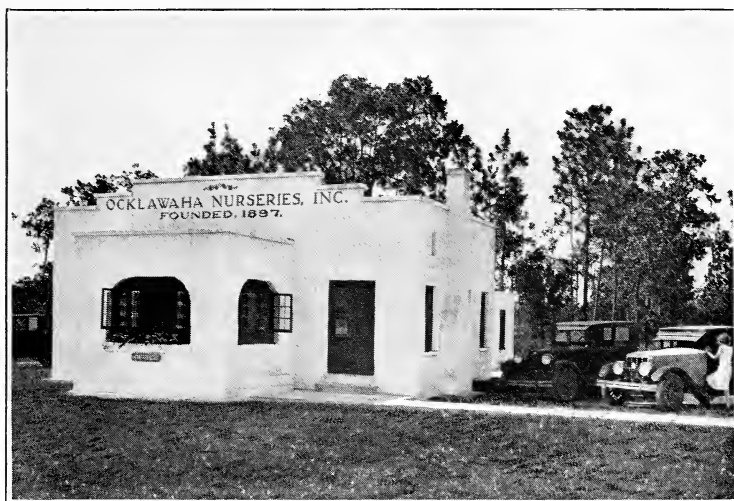
for Planters of New Groves



Ocklawaha Nurseries, Inc.

Lake Jem, Florida

“NO TREE IS A
FIRST-CLASS TREE
UNLESS BUDDDED
FROM A BEARING
TREE OF KNOWN
QUALITY AND
QUANTITY OF
PRODUCTION.”



HOME OF THE OCKLAWAHA NURSERIES AT LAKE JEM, FLORIDA

Ocklawaha Nurseries, Inc.

Post Office: LAKE JEM, FLORIDA

Telephone Long Distance

Mt. Dora, Florida, No. 21 or Ocklawaha Nurseries, Florida

Telegraph—Mt. Dora, Florida

The Oldest Exclusive Citrus Nurseries in Florida

Paid in Capital Stock	\$ 200,000
Surplus Resources	800,000
<hr/>	
Total	\$1,000,000

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R. J. TRIMBLE, *Secretary*

PLANT SUPERINTENDENT

T. C. CALDWELL

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We are always glad to answer your questions on horticultural matters, but before writing us please read this book CAREFULLY to ascertain if your questions are not already answered in it.



Foreword

THE prospective planter of a Florida citrus grove is confronted with an array of intricate, and to him often difficult, problems. Location of the grove site, choice of land, clearing, plowing, fencing, preparation of soil, selection of varieties, purchase of trees, planting and adoption of a grove management program—all require careful consideration, for upon the proper consideration of each of these problems depends the ultimate success of the grove as a commercial project.

This "Book of Truth for Planters of New Groves" is dedicated in the hope that it will help new growers to start their groves *right*. Thirty years of practical experience in all phases of Florida citrus growing is the basis for the suggestions hereinafter offered. During these 30 years, OCKLAWAHA NURSERIES have developed some of the best

citrus properties in the state. The value of every suggestion which we make has been conclusively demonstrated and proved by actual application in groves wherever citrus is grown.

By carefully following the advice given in this book, a new planter can choose the varieties and root stocks which will, on his particular soil, give him a healthy, profitable grove, producing quality fruit in such quantity as to net him substantial returns on his investment. Many growers have already done so. So can any planter who will follow our instructions and benefit by our experience.

Thirty years ago, or even 10 years ago, grove planters did not enjoy this advantage, for at that time many problems of citrus growing were unsolved. But today the beginner can start with the benefit of 30 years of careful research and practical experience. He can avoid mistakes made by planters in the early development of the industry, and bring into bearing a grove with the possibilities of mischance practically all eliminated.

Read the chapter on "soils" carefully, for it applies to all Florida—and that on "root stocks," too, because it covers a vitally important question wherever you plant your grove. Choice of variety to suit your particular requirements is treated in another chapter, as well as cost of building a grove, profit to be gained from it, general care, culture, fertilization and spraying of trees. Properly studied and planned, the whole task of developing a first-class grove becomes one of simplicity, rather than a complex one, and there need be nothing of mystery or doubtful success about it.

OCKLAWAHA NURSERIES own and maintain the oldest and largest test groves in Florida for the express purpose of propagating citrus nursery stock. We are recognized as having contributed more to the improvement of Florida citrus stocks than any other organization. In our work of assisting new planters, our constant aim is to help them develop groves which will prove a perpetual source of profit to them, which will be a credit to Florida's citrus industry and which will be worthy of the reputation of OCKLAWAHA NURSERIES trees.

62,17

Ocklawaha Nurseries, Inc.

PEDIGREED CITRUS TREES

LAKE JEM, FLA.

PRICE LIST, SEASON 1927-28

All Varieties of Citrus Trees Budded on Sour Orange and Rough
Lemon Root Stocks, as Listed in Our Catalogue

	Single -rate Each	10-rate Each	100-rate Each	1000-rate Each
1-2 in. Caliper80	.70	.60	.50
5-8 in. Caliper	1.00	.85	.70	.60
3-4 in. Caliper	1.20	1.00	.90	.80
2 yr. 1 in Caliper	1.75	1.50	1.25	1.00
3 yr. 1 1-4 in. Caliper	2.00	1.75	1.50	1.25

4 and 5 year trees recommended for home orchards Single rate \$3.50
in lots of ten \$30.00

APPLYING PRICES:—The single rate in first column applies on orders for four trees or less, the ten rate on orders from 5 to 49 trees, the hundred rate on 50 to 499 trees, and the thousand rate on 500 trees or more.

Small mixed orders will take the single rate.

There is no economy in planting smaller trees than shown on our list, as such trees are too immature or may be culls, and are never first class.

"No tree is a first class tree unless budded from a bearing tree of a known quality and quantity of production."

When Better Trees are Grown, We will Grow Them

Ocklawaha Nurseries, Inc.

LAKE JEM, FLA.

Telephone Mt. Dora, Fla., No. 21

Western Union Telegraph, Mt. Dora, Fla.

Facts Every New Grower Should Know

THE ESSENTIAL facts regarding Florida's citrus industry stated in this chapter, are given so that the new planter can start his citrus enterprise with his eyes wide open.

While citrus growing, properly conducted, is a profitable enterprise, the man with moderate means should think twice and look well into the future before investing his capital in an undertaking which can not possibly bring him any return for at least four or five years.

Facts and Figures. Grove promoters and developers who flocked to Florida in the early part of the present century knew nothing, and apparently cared less, about the quality of citrus nursery stocks. Their sole interest was to get land planted to trees — any kind of trees — so they could sell it. To supply this demand for trees, many "juvenile" nurseries sprung up and millions of trees of questionable origin and doubtful value were planted.

This situation no doubt accounts for the remarkable fact that the *total* annual production of Florida citrus groves today seldom *averages* more than one box per tree! In 1923, when the State Plant Board made its last citrus census, it was found that there were 16,677,277 citrus trees planted in Florida. This count included both bearing and non-bearing trees, but as four years have elapsed since that census it may be presumed that most of the trees counted at that time have now come into production. For comparative purposes, here is a record of Florida's total citrus shipments since 1923:

SEASON	BOXES
1922-23 - - - - -	16,500,000
1923-24 - - - - -	20,500,000
1924-25 - - - - -	19,150,000
1925-26 - - - - -	14,700,000
1926-27 - - - - -	15,500,000

This production record, it should be remembered, is the average for all groves, good and bad. A well-managed grove,

started with proper selection of stock of good varieties and adaptable root systems, will produce four to five boxes per tree each year at ten years of age. For growers with these kind of plantings, citrus raising is profitable. But is it any wonder that growers with plantings in poor locations and of poor trees find it unprofitable?

Another remarkable fact about Florida's citrus industry is that, with the exception of the Valencia orange crop, only about 10 per cent of the oranges and grapefruit produced in the state are sold in northern markets under their variety name. This, in spite of the fact that all citrus nursery stock has been sold in the past 20 years as being of certain varieties. There are two conclusions to be drawn from this condition. First, that trees from "juvenile" nurseries, when they came into bearing, were found to lack the characteristics of the variety for which they were named. Second, that most of the new varieties brought out by this class of nurserymen proved to be of little value when groves planted to them reached production, so that the fruit from them is now sold as "round oranges" and "common grapefruit."

When OCKLAWAHA NURSERIES, in 1910, introduced budwood selection methods for propagating Florida citrus nursery stock, other nurserymen ridiculed the idea and claimed that it was unnecessary. The comparison between the results of haphazard propagation methods and the results of the budwood selection propagation methods of OCKLAWAHA NURSERIES, however, no longer permits of any doubt as to which kind of nursery stock builds profitable groves.

Citrus Costs and Profits. Striking an average for all of them, Florida citrus growers are making money in spite of the unscientific development of most of their groves. In the season 1924-25 they made an average net profit (after cost of

production was deducted) of 83 cents a box. In 1925-26, their net profit per box was \$1.27½. These figures were compiled by Hon. L. M. Rhodes, Commissioner of the Florida State Marketing Bureau, a government agency. Additional data on Florida citrus production costs for the same two seasons, from the same state official, follow:

	SEASON 1924-25	SEASON 1925-26
Total production, boxes	19,171,440	14,694,120
Average f.o.b. sales price all fruit, per box	\$2.68	\$3.31
Estimated cost production all fruit, per box	\$.70	\$.78½
Picking and hauling, per box	.16	.25
Average packing house charges, per box	.81	.80
Average sales cost, per box	.18	.20
Average total cost of rais- ing fruit, packing, selling ing, etc., in cars ready for shipment	\$1.85	\$2.03½
Average growers' net re- turn (his profit) per box	\$.83	\$1.27½

For the season 1924-25, Mr. Rhodes gives citrus production costs as 80 cents a box for oranges, 60 cents a box for grapefruit and 90 cents a box for tangerines. F. O. B. sales prices in that season averaged \$3.42 per box for oranges, \$1.62 per box for grapefruit and \$4.41 per box for tangerines.

For the season 1925-26, this same authority gives the cost of producing oranges as 88 cents, grapefruit 66 cents and tangerines 99 cents. F. O. B. prices that season averaged \$3.35 for oranges, \$3.20 for grapefruit and \$4.25 for tangerines.

These statistics, it should be remembered, are an average for all fruit raised in the state. The difference in sales prices and production costs for the two seasons is accounted for by the difference in the total quantity of fruit produced.

Growers with good quality fruit, and with a production per tree higher than the average of the state, made more money than is indicated by Mr. Rhodes' figures. There never has been a time in

the history of Florida's citrus industry that good quality fruit could not be sold at prices returning growers handsome profits.

Origin of Standard Varieties. The first oranges produced in Florida were from seedling groves, planted as far north as Jacksonville and south to the Florida Keys. At various places, through this wide belt, there appeared trees of more than ordinary quality production, with an earlier or longer ripening season, or with other advantageous characteristics. As fruit growing became a commercial industry, and wider areas were planted to groves, there was developed as specific types from the old seedling trees such varieties as Parson Brown, Homosassa, Pineapple and dozens of others of local reputation as being better than the ordinary fruit usually produced on seedling trees.

Variation in Types of Fruit. That all of these varieties developed from one seedling strain certainly establishes another fact—that is, that any one type of fruit may vary to the extent of producing many distinct types, even on a single tree. As all of these known types originated from the seedling, and inasmuch as variations will occur on the same trees, the fact is established that these variations will carry with them, always, mutations from the old seedling tree from which they first came.

How Lack of Bud Selection Has Injured Varieties. During the many years in which these new types have been propagated, millions of trees have been grown. Young nursery trees and untested bearing trees have been used as a source for budwood, so these new types have not been tested to determine if they were, or were not, true to the original type. Variations have consequently occurred—thousands of them—and as nurserymen have cut budwood from untested parent stock, they have budded and rebudded variations into each generation of trees grown until little of the



SEEDLING ORANGE TREES BEFORE BUDDING. NOTE UNIFORMITY

original strain remains. Off-type and poor producers naturally dominate the stock of nurseries using such propagation methods. When he plants trees propagated by this system, the planter of Pineapple, Parson Brown or Valencia orange trees, or other standard types of fruit originating from the seedling types, is uncertain as to what his trees will produce when brought into bearing. Undoubtedly, nurserymen propagating trees this way are sincere in their intention to produce stock true to name. But they have not learned that variations occur with such rapidity when trees are so budded as to make those good intentions worthless. True to name means nothing unless the tree bears fruit true to the type indicated by its name.

Where Improvement Began. OKLAWAHA NURSERIES was established in 1897. At the end of eight or ten years

of propagation work, we found that we were bringing into bearing, in our own groves, trees propagated from so-called true-to-name stock (budded either from nursery rows kept absolutely pure as to variety or from young trees planted in grove formation from our nursery), which in such varieties as Parson Brown, Pineapple and Tardiff orange were only 50 to 60 per cent true to type. It was further found that those trees which did not bear the one type of fruit were almost alike, leaf for leaf and twig for twig, in character of growth, with the parent strain.

Mutations—Their Effect. The off-type fruit, without question, came from mutations of the old seedling type with the improved hybrid variety, and they are today producing in budded groves oranges so much like the old seedlings from which they originated that when gath-



ered from the tree the budded fruit hardly can be distinguished from seedling fruit.

Bud Selection—Why? When we saw this, we knew that something was radically wrong with our propagation work. As we knew that the varieties had been kept separate and true to name in the nursery, we decided that variations were responsible. In order to eliminate these variations we began to make selections from bearing trees in our groves producing the best quality and quantity of fruit.

Experiments with Specific Types. We then directed our attention to such other specific types as the Valencia Late orange and early grapefruit, with the idea of detecting in these types the same qualities which have been found in Pineapple and Parson Brown oranges. By close inspection of bearing fruit trees we found that in one block of less than 200 Valencia orange trees we had no less than five distinct types of fruit—medium sized, pale, oblong fruit, small, round, pale-colored fruit, all of the late season for which Valencia is famous, but varying in size, shape and color. Two trees in the block ripened fruit by the first of December, demonstrating that the time of ripening, as well as form and color, were affected by variations. These trees were absolutely true to name, as far as that specification went at that time, but the same rule as to variations applied to them that applied to the varieties originating from the seedling orange.

Without doubt, the Valencia is a hybrid of the seedling orange which developed before its introduction into the United States. Many types of the Valencia have originated in the subsequent propagation from nursery stock in Florida and California nurseries. The mutation of the seedling type is frequently shown by the development of trees from unselected budwood into producers of fruit with an early ripening season. We have made extensive experimental plantings with the Valencia, until we are now

in a position to produce practically any type of Valencia Late orange desired.

Value of Bud Selection Proven by Test Trees. The value of bud selection methods in commercial citrus production is inestimable. We have trees planted in our bearing groves from ordinary propagation methods, in check with trees from selective propagation methods. Both classes of trees are of the same age, on the same type of land, receiving the same attention. Fruit has been shipped at the same time from both types of trees, and at eight years of age the pedigreed trees have produced crops worth \$10.00 more per tree than from the trees of ordinary type. The difference in price obtained per box for the fruit is really remarkable when you consider that our pedigreed Pineapple oranges have brought \$4.20 a box, while the trees of ordinary propagation have never produced fruit which has sold for more than \$2.35 per box—though crops from both classes of trees were sold the same day, at the same auction market, and to the same buyers.

Bud Selection Standardizes Fruit Quality. We believe bud selection will standardize fixed types of standard Florida citrus varieties, and that in years to come planters will realize more and more the value of trees propagated by bud selection methods, so that they will demand nothing but pedigreed trees for all of their plantings. The sooner that they do realize the great importance of bud selection, the better off they will be financially and the fewer trees there will be which will have to be top-worked to meet the demands of the markets for quality fruit of standard type.

It is possible to produce, by any method of propagation, a tree that has good caliper, a splendid root system and a vigorous, healthy top. Any good, merchantable tree will have these attributes. But it is only when the nurseryman *buds the proper strain into your tree* that you can make it a profitable, heavy producer of first-quality fruit. The sooner that

citrus planters learn to demand the right kind of tree propagation, the sooner citrus nurseries generally will adopt modern methods of bud selection.

Standardizing Varieties for General Grove Planting. As late as 1895, the citrus groves of Florida, whether they consisted of a hundred or a thousand trees, were so mixed with varieties that it was almost impossible to tell whether they were orange, grapefruit, lemon, tangerine, mandarine or lime groves. In fact, there was such a diversity of varieties and types of fruit planted that it was practically impossible to make distinctive shipments from these trees. When the freeze of 1894-95 cut these trees down to the ground, growers had learned of the necessity for doing something to standardize their production. It was then that standardization began.

In many localities, where propagation work had been started a few years before the freeze for the purpose of improving types of fruit produced in groves, local

varieties had come into prominence. The work of introducing these varieties in grove plantings began after the freeze. In some communities large numbers of Ruby oranges, in other localities large numbers of grapefruit, and in still other sections large quantities of Valencia Late, Pineapple, Parson Brown, Tangerine, etc., were budded into the sprouts which came up from the roots of the frozen trees. The result was that these new varieties gained foothold, not only in a local but in a general way, and from the mix-up careful shippers separated and introduced the various varieties to the markets of the country. These varieties were not entirely separated, however, except in a few isolated cases where the output of the grove was properly handled by large shippers, under their variety names.

OKLAWAHA NURSERIES were among the first to make a distinction as to types of fruit. We have limited our propagation work to where our entire production in oranges is now confined to the



ORANGE TREES—ONE-YEAR-OLD

Parson Brown and Conner's Early Improved Seedless for early fruit; Ruby Blood, Pineapple and Tangerine for mid-season to late mid-season fruit; and Valencia Late for late-season oranges. For grapefruit, we have stopped growing everything but Conner's Early Improved Prolific and the Marsh Seedless. Conner's Prolific is an extra early grapefruit, ripening from the middle of September to the last of October. It keeps well on the tree and holds its good quality as late as April 15. Marsh Seedless grapefruit ripens from December to March 1, and holds on the tree in good condition as late as June.

Standardizing for Market Pays.

With proper choice of varieties and selection of only such standard types as those which sell for the highest market prices, the earning power of the grove that is to be can be wonderfully enhanced. Such a well-planted grove, when it comes into bearing, will yield the planter far more profit than any of the old groves now in the state. The trees, both as to root stocks and varieties, should be adapted to the soil in which they are planted. The planting of a number of varieties on a small acreage is not advised. For the average planting, it is best to restrict the trees to one variety of oranges and one variety of grapefruit—making sure from their pedigree that the trees will yield profitable quantities of quality fruit. There is no horticultural venture which has ever come under the writer's observation which can approach a well-managed citrus grove in earning power, acre for acre and dollar for dollar invested.

OCKLAWAHA NURSERIES have received the highest praise in testimonials as to the quality of the fruit obtained from their pedigreed propagations. It is nothing unusual for our customers to tell us that they have the finest Valencia Late or Pineapple oranges, or the best early grapefruit grove in their entire section, and that the crop from their grove is not only the largest in yield but the finest in quality as well.

Effect of Improper Bud Selection.

Quite unlike the results reported from plantings of Ocklawaha pedigreed trees are the results reported from plantings of trees propagated from young untested trees or from nursery stock. Groves of the latter type seldom, if ever, produce fruit of a uniform appearance and quality.

One grower tells us that he and his neighbors planted what were supposed to have been 5,000 Pineapple orange trees—all of which were obtained from the same nursery. Not one of these trees, when they came into bearing, produced the genuine Pineapple orange as it is grown in the OCKLAWAHA NURSERIES groves. The fruit from that grove sold for \$1.00 per box, while the fruit from our pedigreed Pineapple trees sold for more than \$4 a box in the season when this case was reported to us. Had that grower and his neighbor planted Ocklawaha pedigreed trees instead of the cheaper trees purchased from another nursery, the income from those trees in that one year would have paid for their purchase and the expense of bringing them into production—three or four times over.

Produce Only Quality Fruit. Production of quality fruit should always be the first aim of the citrus grower. Quality is obtained by budding it into the tree from a tested and proven source of bud wood, and only by careful tree-breeding to assure continued production of first-class fruit can this bud wood be secured. You might as well expect to get a good milk producer yielding a large percentage of butter fat from a scrub cow costing \$20, as to expect good yields of high quality fruit from a tree to which bud selection propagation from a tree of proven parentage has not been applied, and which you can buy at your own price.

Breeding Budwood Trees a Necessity. The high-grade Jersey cow is valued from \$100 on up because she is well-



GRAPEFRUIT TREES—ONE-YEAR-OLD

bred from pedigreed stock, by painstaking care, to get a good producer. The same is true of citrus nursery trees. It costs more to select buds and breed up to a high standard the parent trees from which nursery stock is propagated, than it does to merely go into a bearing grove and cut any bud that is true to name, or to cut budwood from a nursery tree—neither of which have been established, by years of observation, as good producers.

Every tree of standard variety sold by OCKLAWAHA NURSERIES is budded from parent stock that has been established for its worth by bringing young trees into bearing to determine the reproducing value of the parent. Thus the planter of Ocklawaha pedigreed trees is assured that his grove will be of the highest standard.

To the best of our knowledge, OCKLAWAHA NURSERIES is the only organization which had the foresight to start this work many years ago. It is today at least 15 years ahead of its competitors in the development of tested and proven groves

of Record Performance Bearing Trees, for the supply of budwood.

Keep Your Trees Healthy. Quality production can be further aided by properly cultivating and spraying your trees, as well as by planting the root stock and variety best adapted to your soil and other local conditions.

But remember that the OCKLAWAHA NURSERIES propagation work in producing your trees will mean more in favor of their quantity production of high-grade fruit than any other one factor.

How the Public Views Our Work.

We have given demonstrations to thousands of people in our groves and nurseries and we have never had a man on our property who did not leave fully enthused and absolutely convinced of the value of the bud selection propagation methods applied to our nursery trees. This enthusiasm and conviction grows as our trees are planted and come into bearing. A grower can plant Ocklawaha pedigreed

trees with the satisfaction of knowing that when they come into bearing he will have trees of exceptional value, well worth the money, time and care spent on them.

Scores of the highest citrus authorities have visited OCKLAWAHA NURSERIES and inspected our methods. Without exception, they have had nothing but praise for our work. J. G. Grossenbacher, recognized as one of Florida's greatest citrus authorities, in an article in the Citrus Leaf of February, 1927, after inspecting our plant had this to say about OCKLAWAHA NURSERIES propagation methods:

"February 4, I made a visit to OCKLAWAHA NURSERIES to see what damage had been done by the cold snaps of January. I was amazed to find that there had been no damage to bearing trees, and not even a trace of damage to the nursery stock.

"As I had not been over the nursery since 1917, I was interested to learn what had been done on bud selection since my last inspection of the place. Mr. O. W. Conner, who started this nursery and who died in 1918, was a very earnest worker for the improvement of Florida citrus fruit. Prior to his death he called my attention on several

occasions to the results he was getting by selection of budwood from his performance record trees. I am glad his work is being continued. I found that the trees set out in the first planting of Conner's Seedless orange had been carefully studied. It was found that the lot was variable and discovered that there were really three distinct types of trees as regards fruitfulness and quality. Buds from the three types were then propagated and brought into bearing to determine the relative performance of the differences that showed up in the first lot. The fruit showed up true to type in all three cases.

"Two of the strains proved rather indifferent both as to quality and fruitfulness, while the third type remained prolific and produced high quality fruit even on lemon stock. I ate several of these oranges cut from trees on rough lemon stock and found them very fine in spite of their having been ripe since October. They were not only full of juice, but had a good flavor and practically no seeds.

"The ten years elapsing since my last visit to this nursery has certainly given the Conner's Seedless orange a new status. It seems to me that it would be a great boon to the citrus business of Florida if we could get a law passed prohibiting the use of budwood that is not cut from trees selected in that manner. Such a law would make it necessary that our nursery inspector devise some plan by which he can check up on the propagation parent trees from which budwood may be cut to use in the budding of nursery stock."



OVER 60,000 OCKLAWAHA PEDIGREED TREES IN ONE PLANTING, PART OF LAKE COUNTY GROVES CORPORATION DEVELOPMENT NEAR EUSTIS. NOTE HEALTHY, THRIFTY CHARACTER AND UNIFORMITY OF THESE FOUR-YEAR-OLD TREES

What Does It Cost to Establish a Grove?

THIS question has been asked of us by hundreds of prospective citrus grove planters. And it is an important one, for no one should be blind to the facts as to the sum required for a grove investment, the extent of which must depend upon the amount of money which one has for such an investment.

The first cost comes, of course, in the purchase of land. Land may be purchased in various parts of Florida from \$25 to as high as \$200 an acre, varying according to location, quality of soil, etc. Location will generally be found to have the greatest influence on price.

The next expense is in clearing the land. This costs from \$25 an acre, for the medium to good grades of pine land in the hill regions of Florida, to from \$75 to \$125 an acre for the medium to heavily timbered hammock and mixed oak lands in the hill sections or other regions. Flatwoods lands, covered with palmettos, cost from \$40 to \$75 an acre to clear, while prairie lands cost practically nothing to clear in preparation for plowing, though ditching is often necessary on these lands to carry off excess rainfall.

Add the cost of the land which you expect to purchase to the expense for

clearing such land. There is then to be added such items as plowing, fencing, cultivating, fertilizing, spraying, etc. These grove operations generally cost about the same in all sections of the state where groves are planted, and can be itemized as follows:

Plowing and harrowing thoroughly	\$ 5.00 to \$ 7.00 per acre
Fencing in 10 acre tracts	10.00 to 15.00 per acre
(Fencing is less in more than 10 acre tracts)	
Trees, 70 to the acre, 60¢ to \$1.50 each	42.00 to 105.00 per acre

The cost of care and cultivation, after the trees have been planted, may be safely estimated as follows:

First year	- - -	\$25.00 to \$30.00 per acre
Second year	- - -	30.00 to 35.00 per acre
Third year	- - -	35.00 to 40.00 per acre

After the third year your grove will commence to bear.

Taking all of these calculations into consideration, the usual sum necessary to finance the development of a grove until it is brought into bearing ranges from \$350 to \$450 an acre. This cost will vary, of course, with the cost of land, expense of clearing and number of trees planted.

What Will the Grove Pay?

IF YOU plant pedigreed trees from OKLAWAHA NURSERIES, which are budded from the finest parent stock available, it is not very problematical as to what your grove will pay. Pedigreed trees have proved to be the most profitable of any citrus trees grown in Florida. We have found this to be true in all of our nursery test work and in the many commercial grove projects which we have undertaken. Ocklawaha pedigreed trees, planted side by side with trees grown by other methods of propagation, have demonstrated themselves as capable of pro-

ducing three to four times the income that trees of ordinary propagation will produce. These results have been obtained when the two kinds of trees were growing next to each other on the same kind of soil, and were receiving exactly the same fertilizers, cultivation and spraying.

Results of Planting Pedigreed Trees. A one-year-old bud, when it has been planted for four years, is at that stage of growth known as "coming into bearing." When the tree is six or seven

years old, it has reached the stage of profitable production. In our groves of Pineapple and Valencia oranges, which of course have had proper care, we have produced from 8-year-old trees an average of $5\frac{1}{2}$ boxes of fruit per tree, which was sold at a price that gave us from \$2.50 to \$2.75 per box on the tree—with all picking, packing and selling costs deducted. The cost of grove culture in that year amounted to \$80 an acre for these trees, including all fertilizer, spraying, labor, etc. This gave us an actual cost of production for each box of fruit on the 8-year-old trees of $18\frac{1}{2}$ cents per box. Our return per acre from this fruit crop averaged from \$908.60 to \$1,128.60. These, of course, were pedigreed trees. The financial return from the crop from those 8-year-old trees was equal to three times the cost of developing that grove up to the point when it was just coming into full bearing. This is considerably more than is usually produced from bearing trees in most Florida groves, due to the fact that proper methods of bud selection had been followed to give each and every tree in this planting the qualities of tested parents for good fruit production.

Since the above production record was made in our young groves, these trees have increased in bearing capacity and have shown an earning power twice as large as trees budded in the ordinary way and planted with them, side by side.

Why Some Groves Do Not Pay. Prof. A. D. Shamel, stationed in California by the United States Department of Agriculture, has found in applying tree record of production over a period of years that from only 10 to 20 per cent of the trees in tested groves were producing a profit; the balance of the cit-

rus trees in such groves were found to be not yielding enough fruit to keep them up. Having trees of this kind in your grove simply means that the grove's earning power is reduced in accordance with the number of unprofitable trees. As the number of high-producing trees in the planting increases, so does the grove's earning power.

Value of a Citrus Grove. The value of an up-to-date orange or grapefruit grove, of standard varieties, six to seven years old, is fully \$2,000 per acre. If the trees have been planted in good soil, and in a desirable locality, and if they have proven themselves to be profitable producers, it would be no trouble to sell your grove at this price. Therefore, there would be a profit in making a grove and selling it, even if the planter should decide that he did not want to keep it for himself, or if any accident should occur making it necessary to sell the property. Since the bearing power is the chief factor in determining the value of a grove, Ocklawaha pedigreed trees should by all means be planted.

It's Your Own Fault if You Don't Make Money. The only problematic! thing to consider in regard to the profit to be obtained from a properly planted citrus grove is the attention which it will receive during its development. Properly looked after, there are no *ifs* or *ands* about it. Good profits on their investment are assured to those growers who take the necessary precautions to secure trees of known production of quality fruit, and who will give these trees the cultivation and other attention needed to permit them to grow in a healthy, vigorous way.

Always Remember—"No tree is a first-class tree unless budded from a bearing tree of known quality and quantity of production."



VIEW IN ONE OF TEST GROVES AT OCKLAWAHA NURSERIES

Florida Citrus Soils

DIVERSITY of soils over a comparatively small area is the rule in Florida's citrus belt. Often a tract of but 40 acres will contain high or mixed pine, oak and flatwoods land, or pine and palmetto, high hammock (hardwood and palmetto) and heavy hammock land. Proper division of the soils on any tract must be made to determine adaptable root stocks and varieties which will produce the best grades of fruit of the highest commercial value on the land.

Generally, throughout the high pine land regions of Florida's citrus belt, the soil is sandy and covered with pine and willow oak or black-jack oak growth, and is without clay sub-soil. Where such soils are found, lemon root stock should be used, with the variety best adapted to the stock for that region. However, all over this region are to be found large areas of heavier soils, timbered with large, tall pines mixed with willow oak. These soils, as a rule, lie on lower levels than the high ridges first described. They are

of a finer grain or texture, have a thicker growth covering the gray surface soil, are always underlaid with a fine yellow sub-soil, and generally; at from three to ten feet, they are underlaid with a clay sub-soil. These conditions, taken altogether, make the ideal soil for planting all varieties of citrus fruit on sour orange stock.

Flatwoods. Within the same citrus belts also will be found large areas of flatwoods lands, rich and heavy in character, underlaid with a very fine grain chocolate sub-soil, and in some cases with hardpan at a depth of two or three feet, on which the growth is generally heavy, thick with palmetto, pine and wire-grass. These soils have an elevation of from four to ten or twelve feet above water level. Where the surface of the ground has patches of dwarf myrtle bushes, or dwarf runner oaks, the soil is generally the most fertile of any of the pine or flatwoods class, but often colder.

On flatwood lands, the sour orange stock should be used exclusively. These soils also are generally adapted better for the production of Pineapple and Parson Brown oranges and tangerines, and early varieties of grapefruit. They are not so well adapted for the production of later-ripening types of fruit.

Hammock or Hardwood Soils.

There are also small areas of heavy hammock or hardwood soils, which may or may not be underlaid with clay or marl. Where clay or marl does underlay these soils, it is generally at a depth of two to three feet. Where such soils are found, the elevation above water level is generally not more than seven or eight feet.

These heavy hammock areas are considered among the very best for production of early grapefruit, Parson Brown, Conner's Early Improved Seedless and Pineapple oranges. This is because the sub-soil is never without a supply of moisture and is constantly giving up lime-bearing solutions that keep sweet and fertile the surface covering of the soil, hastening development of the fruit, giving it the best of color and peel texture, and affording the earliest ripening season of any soil among those thus far described.

Conner's Early Improved Prolific Grapefruit will, on such soil, ripen its fruit and have it ready for market before the 15th of October every year, and generally before the 15th or 20th of September. At such a time, grapefruit is always worth a higher price than will prevail for it during any part of the balance of the Florida shipping season. Any good, well-matured and well-colored fruit will, at this early season, sell for from \$4 to \$7 a box in northern markets, while later in the season such mid-season types as Walters, Duncan, Pernambuco and other standard sorts, usually sell at approximately half that price.

Hammock (Sandy Type). Among the hammock soils found in the citrus

regions are the high, sandy type, with a growth of live-oak, hickory, ash, cabbage, palmetto, water oak, etc. They are not underlaid with clay, and generally lie in rolling formation around clear water lakes. Their surface soil is light gray in color, and the sub-soil either gray, yellow, red or snuff-colored. The darker the surface of the soil the better that the land is, as a rule. Those lands showing light gray sub-soil all the way down should be avoided for grove planting.

The type of fruit generally best adapted for these high hammock lands is the Valencia orange and the Marsh Seedless grapefruit, as development of fruit and ripening season will be later on such soils than generally obtain on any other soils except the high, ridge pine lands. Without question, sour orange stock should be used on all hammock lands, as this root system gives better results in producing fruit of a high finish and in keeping the tops of the trees in a healthy and vigorous condition, than will the lemon, grapefruit or any other root stock which you might use.

East Coast Soils. Soils along the Florida East Coast, from Titusville south to Little River, are generally on a par with those of the West Coast, except that in that portion from Titusville to West Palm Beach on the East Coast is to be found a belt of hickory ridge, mixed with cabbage palm, medium-sized water oaks, palmettos and growth of a like nature. This soil is different from anything to be found elsewhere in the state. The surface of the soil is usually white to a very light gray in color, and the sub-soil from reddish to chocolate in color, and all of it is of a sandy composition. Lemon stock has been planted on this soil in a number of places, and has not proved successful except possibly for grapefruit on the higher areas. Neither has the lemon stock been found to be very healthy on this soil, nor long-lived, because, as a general thing, the roots do not penetrate deeply into the sub-soil, which is the part of the soil of greatest

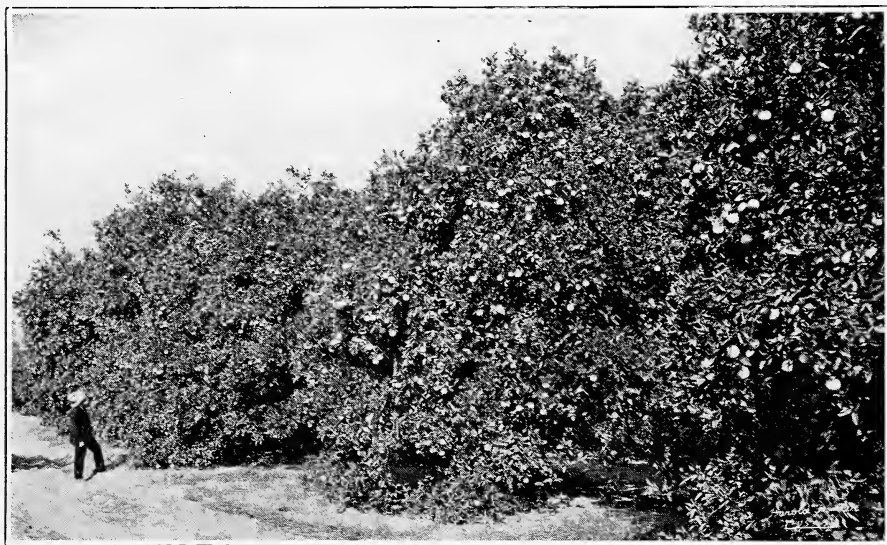
value to the citrus grower. While the sour orange stock requires a longer time to get started and to come into vigorous growth, it is, during that time, sending its roots down into richer sub-soil. Thus firmly anchored, it will in years to come produce heavier crops and better fruit than trees on lemon stock, and there is no limit to its profitable production after it once has its roots firmly fixed in the soil. Our advice to citrus planters is that they cling tenaciously to the sour orange stock for these ridge lands, especially along the Indian River, and unless you are situated on the second or third ridge from the coast, where the slope is long and the sub-soil lighter in color, where lemon stock may be planted to better advantage.

The heavy hammock soils in the vicinity of Titusville, Cocoa, Rockledge and other points south of Miami, usually have but a slight elevation above sea level. Some of these soils are underlaid with coquina rock, but most of them are underlaid with marl, and in some places limestone.

Wherever marl underlies these soils, it is an advantageous location for a citrus planting, for sweet soil is the rule wherever marl is found. Where solid beds of lime rock or other materials are found under the surface at from two to four or five feet, it is considered an obstacle to citrus planting unless the land is blasted with dynamite to permit the roots of the trees to penetrate below the sub-soil.

In considering root penetration, you can take it for granted that the roots of your orange and grapefruit trees will never go deeper than the water level. Neither will fertility obtain below the water level, for the first result of standing water in your soil is to sterilize it so far as plant food is concerned.

Flatwoods, or mixed pine and palmetto lands, also obtain in large areas along both the east and west coasts. In some districts these soils are underlaid with hardpan, marl, clay or shell. The best land for citrus in this class is that underlaid with marl or shell. However, the hardpan lands may be made available for cit-



PARENT ORANGE GROVE AT OCKLAWAHA NURSERIES. ALL OF OCKLAWAHA NURSERIES TREES ARE BUDDED FROM TREES OF THIS CHARACTER

rus culture by dynamiting each tree hole before the tree is planted, and providing adequate drainage, so that the soil will respond readily to cultivation and sweeten with the planting of cover crops.

Treatment with hydrated lime or crushed limestone is always beneficial to hardpan lands. About 1,200 pounds of hydrated lime, or 2,000 pounds of crushed lime rock, to the acre, is the amount usually applied. When plowed in thoroughly to a depth of six to eight inches, this lime application will neutralize the tannic acid contained in palmetto and other root growths and convert into calcium nitrate and other plant foods the organic materials in the soil.

We do not generally regard hardpan lands suitable for planting citrus trees until this application of lime has been made, and a heavy cover crop of cowpeas, beggarweed or velvet beans has been turned under. If your land is not sweet enough to grow a cover crop, then it is not sweet enough to produce a healthy orange tree. Let this be your guide in planting such soils.

Prairie Soils. These soils are usually found within areas of recent drainage work, carried out along the east and west coasts of Florida, and as far as ten miles inland. The water on these soils generally has been drained to a depth of from $2\frac{1}{2}$ to 5 or 6 feet below the surface. Prairie lands vary from, first, a white sandy soil terminating in a white shell sub-soil almost barren of any covering, though often covered with short grassy growth; to second, soils covered with 1 to 2 inches of light fluffy muck composition underlaid with from 6 or 8 to 12 or 14 inches of clear sand, this in turn underlaid with shell; or third, with a surface soil of from 6 to 12 inches of loam underlaid with red or blue clay, which in turn is underlaid with marl. The first described soil is of rather doubtful value for citrus growing. Some plantings of citrus trees, made 5 or 6

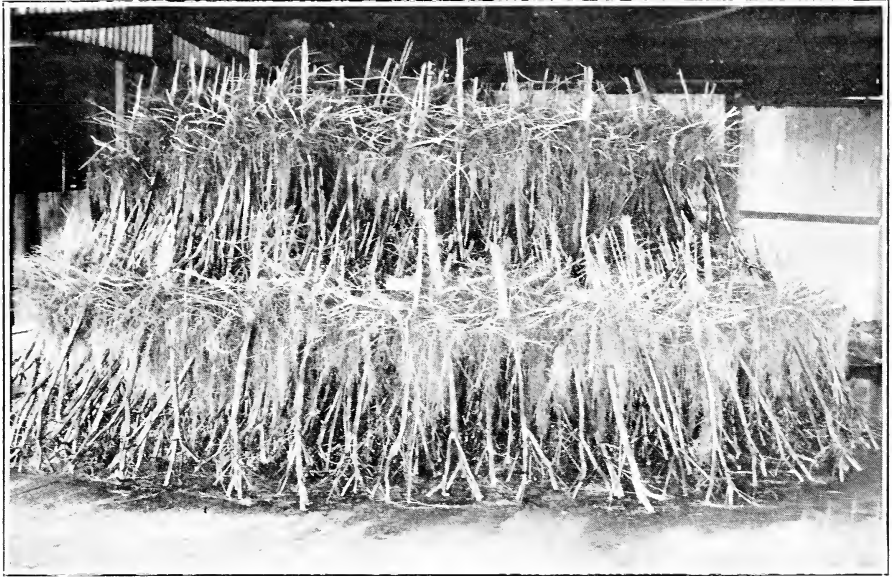
years ago, on such land, have shown fair progress, though many of these plantings have been an absolute failure.

On lands of the second description it is practically certain that citrus plantings will fail, as the sand underlying the light muck strata is absolutely sterile and can not, to any practical extent, be mixed with the sub-soil. Until this is done, it will be impossible to develop a citrus tree on such land.

The prairie lands last described, however, will be found extremely fertile and rich and of such composition as to make a citrus tree grow luxuriantly and produce heavy crops of good fruit, provided it is cultivated so as to supply the requirements of the tree.

Such soils should be mounded to a height of at least 16 to 18 inches above the general surface. This can be accomplished by plowing the land several times, with the plow furrow turned toward the tree row. When this is done the tree should be planted on top of the ridge, and only light cultivation should be practiced thereafter. Trees on rich land of this nature must send out their roots close to the surface, and if this development of the root system is interfered with through cultivation, dieback is likely to be the result.

Applications of limestone or hydrated lime should be made to such soils only when it is found that they contain excessive amounts of acid. The planter is cautioned to always make a litmus test of his soil before planting to determine the acidity of the soil. The trees planted on this land should be no larger than the standard $\frac{5}{8}$ caliper, 1-year-old bud on 4-year-old sour orange stock. With good trees and proper cultivation, an extremely healthy and thrifty grove can be developed which will produce large quantities of fruit at a lower cost than can be raised on many other soils along either the east or west coasts. Muck lands, when well-drained, are recommended now for plantings on sour orange stock.



LAST INSPECTION BEFORE PACKING. NOTE ABUNDANCE OF ROOT SYSTEMS

Root Stocks

IN THE foregoing pages we have tried to comprehensively explain the different qualities of Florida soils. By reviewing this treatise on soils you will find that we have specified sour orange stock for all soils with water tables from $2\frac{1}{2}$ to 8 or 10 feet below the surface in hammock, flatwoods and prairie lands, and for all heavy classes of pine lands where the timber is heavy and elevation is moderately low or high, and where water oak, or willow oak, or other forms of oak growth are mixed with the pine. We have specified sour orange stock for all hammock lands, including the hickory ridge lands described as lying along the East Coast. For the high sandy lands in the hill regions we have specified rough lemon stock.

Sour Orange Stock for Rich Lands Makes Fine Fruit. We prefer, for the sake of the quality of fruit produced, that on all lands suitable to

sour orange stock such stock be used. While this stock may be slower in getting started, it is employing the time well because it is sending its roots deeper into the soil and penetrating the richest soil treasures, which will, as time goes on, be brought up and stored in the tree, to be used for the production of heavy crops of fruit of a fine quality.

It would, however, be foolish to prescribe the sour orange stock as the one and only stock to use for all plantings of citrus groves in the state. There are soils on which the lemon stock is much better to use because of its greater thrift and vigor. Production of good crops of fruit can be obtained from trees on lemon stock where it would be almost impossible to cultivate the sour orange because of its lack of adaptability to such soils.

Good judgment must be exercised in placing lemon and sour orange stock on their respective soils. We prescribe,

as a general rule, the selection of rough lemon stock for high ridge lands, which may or may not be underlaid with clay. On all other lands, as described, we recommend sour orange stock.

Lemon Stock for High, Light Soils Succeeds Best. The high ridge lands, as a general thing, are deficient in humus and moisture. Lemon stock is capable of largely overcoming these soil difficulties, while sour orange stock is not. On these lighter grades of soil, it is perhaps necessary to fertilize a little more heavily. As lemon stock is mainly a surface feeder, (feeding seldom at a depth greater than 10 to 12 inches), it will readily pick up commercial fertilizer spread to secure growth of the trees, and it will readily assimilate organic materials furnished by nature through cover crops, and convert them into vigorous growth and prolific crops.

The growth habit of lemon stock must not be left out of your consideration. Where the influence of that habit is against your interest, avoid it by making proper choice of varieties. Over many years of experience we have found lemon stock capable of producing extremely fine grades of early grapefruit, Valencia Late and Pineapple oranges and tangerines. Better results are generally had with limes budded on lemon stock than by any other means of propagation.

Sensible Planting. Trees on lemon stock should not be planted too far apart. We have had better success and produced better fruit by planting grapefruit and Pineapple and Valencia Late oranges at the rate of 80 to 100 trees to the acre than by other methods of planting. The reason for this is that the root system of these trees, after inhabiting the soil, acts as a check to luxuriant growth and forces heavy bloom and consequently heavy fruiting. It is better to have a medium-sized, heavy fruiting tree than to have a big, sappy, fast-growing tree, bearing light crops of coarse, woody fruit.

Use Care in Selecting Your Root Stock. We have come in contact with many growers in various parts of the state who have been advised to use rough lemon stocks on soils of the flatwoods type, with water levels not over two or three feet below the surface, and who, acting upon the advice of nurserymen circulating the state with this advice, were about to place orders for trees on rough lemon stock for such plantings. Such advice is misleading and put out for the express purpose of securing business and no other. If followed, it will certainly be suicidal as far as the future success of the grove is concerned. We have also come in contact with growers who had been advised to use sour orange stock on some of the lightest, whitest, sandiest land in Florida. The grower is constantly receiving advice of this kind from unscrupulous concerns who probably are interested in the grower only to the extent of the amount of money they can get from him for trees. The grower should be extremely careful in taking advice of this kind until its value can be substantiated by some responsible person of experience, for it is absolutely necessary to have the proper root stock for your soil in order to obtain anything like full success with a citrus grove.

Citrus Trifoliata Stock. This root stock is valuable for plantings on soils heavy and rich and inclined to excessive moisture without being acid or mucky in their nature. It is extremely hardy and can stand a temperature of 8 to 10 degrees above zero when dormant in the winter season. It is valuable as a stock upon which to bud Satsumas for planting on rich, heavy soils in the northern fruit belts of Florida, and in Alabama, Mississippi and Louisiana. It is not suitable for planting in the delta lands of southern Texas, because of certain soil organisms in that region that destroy it almost immediately after planting. This stock is not adapted in any way for grove plantings in any part of Southern Florida, nor on any light, sandy soils anywhere.

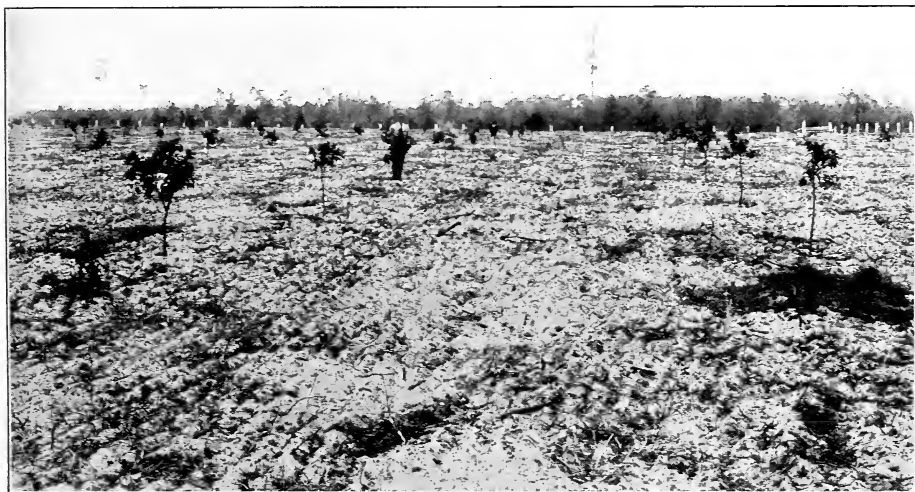
How to Manage the New Grove

MANAGEMENT of the new grove is not an intricate problem, and need not be so regarded by the new planter. Application of common sense with proper business methods, and the careful observance of all of the suggestions hereinafter offered, is all that is necessary to assure the successful growth of trees during their early years. But make sure that you carefully consider and properly carry out each of the suggestions which is offered in this chapter, for lack of attention in any one phase of citrus culture may result in an unsatisfactory development.

The first requisite in planting a grove is to get a good piece of land. This can usually be judged by the timber growth, which, if tall and straight and heavy in character and well-leaved, usually indicates not only a good surface soil but a good sub-soil. When this is done, the next thing to do is to properly clear it of all stumps, roots, brush and timber of all kinds. Then thoroughly break up the land from four to six inches deep, and thoroughly cut it up with a spading or cutaway harrow. Then let it stand long

enough for the ground to settle, after which it is ready for the trees. Where it is possible, do all of this work in the spring. After the land is broken up and harrowed, plant a crop of cowpeas or velvet beans. Plow this cover crop under the following fall before the trees are planted. The soil will be greatly benefited by this procedure.

Time of Planting. The season of planting in Florida runs from November 1st to March 1st and during the summer rainy season, generally from June 1st to July 15th. Experience has taught us, however, that the winter planting is the most successful and the earlier the better as trees planted early in the winter months will put out a short growth of leaves and twigs which will develop the root system of the trees while the trees remain dormant through the winter period, thus forming a foundation that will support a thrifty spring growth. Do not get the idea that it is necessary to wait until after danger of frost to plant your trees, for if your trees are planted early in November and put on foliage, the



IMPROVED CONNER PROLIFIC GRAPEFRUIT BUDS, PLANTED SIX MONTHS

chances are that those trees will remain throughout the winter season in a more dormant condition than they would if left in the nursery.

When Your Trees Arrive. If in bundles or bales, bury the roots in the ground until ready to plant. If in boxes, haul them to the grove and if ready to plant, take off the cover of the box and keep them with you in the packing material and plant them direct from the box. Always dip trees in water before planting. Never expose the roots to frosty air or sunshine. Do not let them get dry. If not ready to plant at once, haul the trees to a cool, shady place—a shed is preferable—and keep them in the cases until ready to use them. Our packing is so carefully done that our trees will, without difficulty, be safely kept in cases for a month after packing, in the winter season. In the summer planting season, immediately take them from the cases, water well and heel in until ready to plant.

How to Plant Trees. Always plant your trees high—at least two inches higher than they stood in the nursery. The crown roots highest on the stem of the tree may be calculated as one inch below surface of the ground in the nursery. Have crown roots sloping downwards from the tree about four inches to the foot in length. Spread the roots out well and separate each layer as the hole dug for planting is filled. Use only rich top soil to fill the hole and sift it in rather than throw it in by spadesful at a time. As you finish up, elevate the outer rim of the hole so as to leave a saucer shape equal to the diameter of the root system of the tree, and into this pour, from three feet high, at least three gallons of water. Let this settle. Then draw the loose earth of the elevated rim in around the tree until all is level. Then it must be firmed down, preferably by treading. This is best done by placing the toe of your boot to the tree and press-

ing first and heaviest with the heel, otherwise you may break the lateral roots or cause them to stick upwards at the ends, instead of remaining buried.

To facilitate drainage on low lands, the trees must be planted high. This is best done by mounding up the soil where the tree is to be planted. The height of the mounds on which trees are planted will vary from 6 to 18 inches, depending upon the elevation necessary for proper drainage. In time the land between the rows may be built up to this elevation, leaving the trees on slight ridges one way. These ridges should be placed so as to best drain the land in extremely wet weather. Disregard compass directions and plan these ridges so that you will be sure to get good drainage. See Page 18—"Prairie Soils."

The number of trees required to plant an acre of grove is as follows:

15 x 30 ft. - 90	20 x 30 ft. - 70
20 x 20 ft. - 108	18 x 27 ft. - 79
21 x 21 ft. - 100	30 x 30 ft. - 49
25 x 25 ft. - 70	

Fertilizing and Cultivation. Do not fertilize your trees when first planted. We will assume that they have been planted either through November or early in December, and if so, they may be fertilized about the middle of February, at which time from 1 pound to a one-year-old bud to 2 pounds for a two-year-old bud may be applied in a circle extending from tree to at least two feet from the trunk, sprinkled evenly. Work this fertilizer lightly into the soil with the hoe in such a manner as not to scatter it away from the place where it was distributed. After this the young trees should be hoed regularly and the ground repeatedly stirred lightly on the surface to keep the moisture content of the soil up to normal. If your trees are on sour orange stock it is absolutely necessary that you anticipate the drying out of the soil to the point of danger to the tree. Water the tree moderately, and with such a quantity of water as to afford ample moisture without using too great a quan-

tity to keep the tree in perfect condition. Do this through your first dry season after planting, and you will bring your tree planted on sour orange stock through its first season in the pink of condition. Thereafter it will give you no trouble as long as you keep the weeds down from around it and the ground properly fertilized and cultivated.

Cultivation should be done from the middle of February, following the planting of the trees, through all of the first summer. The entire surface of the ground need not be cultivated, but that portion of it lying within six or eight feet of the tree should be kept cultivated and clean by shallow cultivation which will not injure the root system. In no case should this cultivation be more than 2 to 2½ inches deep. This can be accomplished by going over the ground every two or three weeks during the first season after planting. The middles between the rows of trees may be allowed to grow up in grasses, but the grove would be better improved by planting cowpeas, velvet beans or beggarweed to plow under the following fall. These cover crops add much valuable plant food to the soil.

The next fertilizer may be applied to the tree at the beginning of the rainy season, which usually begins in June. One-half pound more per tree may be applied than was applied during the first application. A third fertilizing may be applied about the 1st to 20th of September, using one-half pound more per tree than in second application. Each time you fertilize get a little further away from the tree, and be careful to hoe the fertilizer carefully into the soil and not to spread it from the point on which it was originally applied. Increase the quantity one-half pound each application until at each fertilizing time you are using 5 pounds per tree. Increase the quantity thereafter according to the needs of the tree, with which you will by that time be familiar.

The soils of Florida are so diversified in character that a positive rule can not

be laid down for the use of fertilizer. The above schedule of quantity and frequency of application will apply generally to such land as that described as a good grade of high pine land.

The fertilizer for the young tree should contain approximately:

- 4% to 5% of Ammonia
- 2% to 3% of Potash
- 6% to 7% of Phosphoric Acid

As some of the heavier soils are at first well supplied with both potash and nitrogen, and are capable of growing the young tree with little additional nitrogen or potash, these soils should be fertilized more lightly than the lighter grades. The trees should be carefully watched, and with the first appearance of dieback the quantity of fertilizer applied should be reduced. Acidity of the soil is often the chief cause of dieback, however, and wherever this condition appears you should satisfy yourself that your land is well-drained, as acidity of the soil and excessive moisture are two conditions usually found together. If your soil is low and impossible to drain, cultivation should be very light and the acid condition neutralized by frequent applications of ground limestone to the extent of from 1,200 pounds to 2,000 pounds per acre. In such low areas, the ground should always be elevated from 18 to 24 inches before the tree is planted, at the point where the tree is to stand. This provides better surface drainage and permits the passing away of excessive rainfall through the water furrow created by such elevation.

Acidity of the soil is especially likely to occur where palmettos have grown heavily, and their acid-bearing roots still remain in the soil after the palmettos are removed. In combating acidity from this source, generous application of lime deeply plowed in, before tree planting, is a good remedy, as the lime must be brought in contact with the acid strata in order to neutralize its effect.

Where dieback has injured the tree, or where it is gaining headway, an application of bluestone at the rate of ¼ pound



OCKLAWAHA PINEAPPLE ORANGES, ON SOUR STOCK. PLANTED TWO YEARS

to a tree one-year-old to 2 pounds to a tree four-years-old is generally beneficial. Where dieback appears, very little or no cultivation at all should be done until conditions improve. Weeds and rank grasses should, of course, be chopped down so that the tree will not be choked or robbed of its moisture.

Mulching. This is better done in the early spring, after banks are removed and danger of cold weather is passed. Its chief benefit is in retaining moisture and keeping the earth cool about the roots. Straw (not pine-straw), dead oak or other leaves, peavines, potato vines, or any other material of a like nature, may be used.

Spraying. Spraying is absolutely necessary in order to keep a tree healthy. With such varieties of citrus as grapefruit, limes, lemons, tangerines and King oranges, a fungous disease, known as lemon scab, quite frequently attacks the trees with the very first growth that they put out. This fungous disease can be prevented if the young leaves and growth are coated with a fungicide. The best we have found for this purpose is lime-sulphur solution, applied to the young growth during the dry season at a

strength of 1 to 50 or 60, and during the rainy season as strong as 1 to 40 or 50. Lime-sulphur is also valuable for the destruction of purple mites, red spider, and other small insects of their kind. The presence of mites may always be determined by the dusty appearance of the leaf, which usually looks as if either a grayish powder or a very light dusting of sulphur of flowers had been sprayed over the leaves. *Frequent spraying* with lime-sulphur prevents the appearance of all of these pests and should be applied with the very first growth that comes out on your trees, regardless of whether you are sure any fungous disease exists or not. The trees will respond readily to this treatment and will grow luxuriantly from the first, frequently making two or three times the growth in one season with spraying applied than if no spraying had been done. Spraying is cheaper than fertilizer, and is a material aid to tree growth.

For sucking insects of the leaf and wood, like purple scale, whitefly, and other insect pests, a miscible oil spray should be used. This is not usually required until the second or third year after planting, when slight infestations of scale insects may occur. Spraying for insects when the larvae are young and

easily killed is the best time for doing this work. Whitefly are usually most effectively sprayed about the middle of April, when practically the entire colony will be in the larval stage. Purple scale are in this stage from the 5th to 20th of May and are more easily killed at that time than at any other time during the season. One good thorough spraying, where care is taken to apply the spray material to all parts of the bark, as well as to the under portion of the leaves, will generally make a good clean-up of these insects.

Protection from Cold Weather.

Protection against injury by cold weather is advised for the first five years after the tree is planted in the citrus belts of Florida, Texas, Alabama, Louisiana and Mississippi. It does not necessarily follow, because this is a wise proceeding, that orange groves are frozen out every year, nor that there is extreme hazard of this kind. If that were true, large bearing trees of from 40 to 75 years old would not be found today in Florida groves. Neither would the hundreds of thousands of young trees, from two or three to ten or twelve years old be coming into their full bearing as they are today. Great fortunes have been made from hundreds of citrus fruit groves in Florida which never had a fire-pot or any other means of cold protection, while in other well-defined areas, where it seems that cold is more likely to occur, it has been almost impossible to bring a young grove into bearing because of this difficulty. Fortunately, these areas are small, and are rarely found in this state south of a line drawn from Crystal River on the West Coast to New Smyrna on the East Coast. North of this line, through Marion county and the southern portion of Putnam county, are several of the most profitable citrus producing sections of the state. There is no frost line on the mainland of Florida, hence the necessity for protection against the occasional cold that may or may not occur in 20 years.

After forty years' experience in citrus

fruit growing in Orange county, which is a little east of the geographical center of the state, we have determined that the risk of cold is not great enough to warrant putting into our groves smudge pots or other means of cold protection, as only once or twice during the last ten years have heavy frosts occurred. Until February, 1917, no cold injury was done any trees in our groves or nurseries that would approach anything like a loss for upwards of 20 years. Therefore, the only means of protection that we apply is sufficient banking up of earth around the young trees the latter part of December to protect the budded portion of the tree from frost in case the temperature goes low enough to do any injury. This protection should be given to all young trees for the first five or six years after planting. In case of injury to the tops sufficient to necessitate cutting back portions of the trees, or even cutting the entire tree back to the point where banked, the tops will quickly recover. Where a tree has been planted three or four years, the top that can be re-grown in one season because the fine spread of its root system will be practically equal to what the tree had before it was cut down, and the next year it will begin bearing as if it had never been injured. So we urge all planters to amply protect their trees in this way.

Where possible to do so, choose a location for your grove on the south or southeast side of a large body of water. A grove so located is practically immune from cold injury. All of our cold waves come from the northwest and are usually accompanied by a strong wind which warms in passing over the water, thus causing a considerable difference in temperature in a grove so located as compared with groves which are not protected in this way. Heavy belts of timber to the north and northwest have also been found beneficial in protecting groves from cold weather, and are almost as beneficial as water protection. Where exposed to strong winds, the planting of camphor trees, or other trees of like

growth character, has been found to offer protection from cold and wind injury.

Sprout Removal. Too much pruning is injurious. Remember always that leaves are necessary to root development. All plant foods are assimilated and distributed by the leaves. Therefore, do not remove any sprouts coming out above the union until your tree is one-year-old. After the natural head is formed, you can remove all sprouts that are not necessary in forming and shaping the top. After the first year, remove all sprouts from the trunk below the branches promptly, and always prune out dead wood and water sprouts.

Why We Can Advise You About

Stock Adaptability to Soil and Variety. The value of different stocks named in this book has been determined in our test groves. These groves cover six grades of land, light, sandy, mixed oak and pine—high rolling pine, 80 feet above water level, pine underlaid with clay—high hammock, low hammock, and heavy hammock, and flatwoods land. Certainly this about comprises the list. Hence, we believe that we are competent to advise on this subject. In our groves you will find the result of planting each and every stock we describe on each different soil enumerated. Come and see or take our word for it that we are *right*. We have always tried to make the OCKLAWAHA NURSERIES the veritable home of the finest citrus trees in the world.

Pedigreed Trees

IT HAS been definitely established that bud sports and variations do occur in a large majority of citrus trees. Hence the necessity for testing parent trees to determine the worthy ones of the non-mutating type for propagation work.

Why Do We Call Our Trees Pedigreed Trees When Some Authorities Claim a Tree Does Not Have a Pedigree?

First—The word means having a notable and recorded descent over a period of years.

Second — OCKLAWAHA NURSERIES trees are all bred from Performance Record Parent trees.

Third—Pedigreed is what they really are. No line of ancestry of any pedigreed stock goes back further than the point where it was first noticed and this certainly could not have been origin. To this extent OCKLAWAHA NURSERIES trees are just as much pedigreed as any pure bred cow, chicken, dog, or anything else that is called pedigreed and more-so because the parent tree in the OCKLAWAHA NURSERIES groves is first num-

bered and a record is made of its fruit production. If this record is satisfactory, buds are selected and separate nursery rows are budded from each individual parent tree. When these young trees are 1-year-old they are planted in test groves and given a number that keeps them in check with the parent. When these young trees are 5-years-old, a check is made for three seasons of the fruit they are producing. If this check shows that the test tree is producing average prolific crops of high quality fruit without variations from the standard type, then its parent is marked up for a budwood tree. If any of the young trees prove to be shy bearers or producers of off-type fruit in the slightest degree, their parent is not used for further propagation. Thus there is eliminated the undesirable parent trees while the worthy ones are to be used in our propagating work are definitely established. At the least 8 years are necessary, under this method, to prove the worth of the parent.

If this does not entitle us to use the term "Pedigreed," then we certainly must misinterpret its meaning.

Commercial Varieties

WE HAVE endeavored to furnish prospective grove planters, in this book, the most up-to-date information available. We have listed for commercial grove planting those varieties which have been tried, proved and accepted in the markets.

Hardly a season goes by that some nurseryman does not try to introduce some new variety of orange or grapefruit; or he claims to find merit in some forgotten variety and recommends it for new plantings. When these new varieties are recommended, it will be well for the planter to make a thorough investigation to determine just what has been done to establish their value. It should be remembered, too, that to properly test any variety of citrus fruit requires that trees of that variety be brought into bearing to prove the worth of parent stock. This can not be accomplished in less than 8 years. Florida's climatic and soil conditions are so diversified that a tree which does well in one locality may not be worth anything for grove planting in a neighboring locality.

Do not experiment with new varieties which have been tried only in one locality, and which have not been tested and proved over a period of years throughout the state's citrus belt. Nearly all of those varieties not listed as standard in this book has been dropped due to their various shortcomings. The same is true of root stocks, such as sweet stock, which was discarded because of its susceptibility to foot rot, and the grapefruit stock, discarded because of its irregular crop production. There are new varieties and root stocks constantly being tested, but none of them have been under observation long enough, or proved of value by commercial plantings in the different parts of the state, for OCKLAWAHA NURSERIES to recommend to its customers.

Within the last 30 years we have brought into bearing in our test groves

many types or so-called varieties, only to find many of them possessing such disadvantages for commercial planting as to make them of no value. Consequently, we do not propagate some of the varieties which other nurseries are offering for sale. We have tried many of these varieties and we have retained for propagation only those which possessed real merit. Others we still have under observation.

The planter must realize that it would be to our advantage to propagate and recommend any varieties that under our test have proven worthy. If we had found that the untold number of varieties not mentioned herein would give the same satisfaction as the ones we catalogue, we certainly would have propagated them and offered them to the trade with our full endorsement, and in the years to come we would have been benefited by the planting of them under our recommendation to just the same extent that we expect to benefit by the planting and bringing into bearing of varieties that we have, through so much painstaking care and expense, developed and tested.

Prices

AS PRICES are subject to change from time to time, our price lists are made up in loose leaf form and copies of these will be mailed upon application.

Write us fully of your requirements and planting conditions and you can depend upon us to give you the best service and the best trees for your money.

We Recommend the Following Varieties—

ORANGES

EARLY	{	Parson Brown
		Satsuma
		Conner's Early Improved Seedless*

MID-SEASON	{ Pineapple Ruby Blood Tangerines
LATE-SEASON	{ Valencia King

GRAPEFRUIT

EARLY—Conner's Early Improved Prolific*

LATE—Marsh Seedless

All other varieties are carried by us for home orchard planting, such as:

Mandarin
Tangelo Thornton (early)
Tangelo Sampson (late)
Everbearing Lemons
Villa Franca Lemons
Ponderosa Lemons
Persian Limes
Tahiti Limes
Mexican Limes
Florida Limes
Kumquats, Nagami

* Conner's Early Improved Seedless Orange and Conner's Early Improved Prolific Grapefruit are fully covered and protected in every way in applications now pending for patent. Any one offering either of these varieties is infringing on the rights of OCKLAWAHA NURSERIES, and such stock is no doubt of questionable character.

Sizes

THERE IS no economy in planting smaller trees than shown on our list, as such trees are immature and may even be culls and are seldom first-class. Here is a list of sizes showing age and height of trees:

½ inch	3 to 4 feet	1 year
¾ inch	4 to 5 feet	1 year
¾ inch	5 to 7 feet	1 year
1 inch	5 to 7 feet	2 years
1½ inch	7 feet	3 years

Large Sizes. We always have several hundred large sizes on hand and as they have reached the fruiting stage, they make a very desirable tree for yard planting.

Always Specify Root Stock Desired When Ordering Trees.



NOTE ABUNDANCE OF FIBER ROOTS AND STRAIGHT TAP ROOT, BOTH OF WHICH ARE ESSENTIAL IN FIRST CLASS ROOT SYSTEMS

Age of Root Stock. The age of root stock at budding time is generally three to four years, so that a one-year bud may be described as being budded on a four or five-year-old root. The age of root stock applies to that at digging and planting time.

A careful selection is made for only the most robust, healthy seeds for planting our root stock. All seedlings are rigidly culled before they are budded, thus insuring nothing but healthy, first-class root systems. (Note illustration.)

We maintain sour orange and rough lemon trees in our groves for the express purpose of producing seeds for our nursery work. Many years ago we found that purchasing seed from outside sources was unsatisfactory, owing to the fact that in only a very few cases are sour

orange or rough lemons cultivated; therefore, fruit from trees of this type produce unsatisfactory, unhealthy seed. Nine times out of ten seed purchased in this way was found to be mixed and it is almost impossible to separate one kind of seed from another.

We believe that we are the only nursery in Florida of any size that can claim that it raises its trees from seed to production.

We have had many tell us that our root system was the finest that they had ever seen.

Oranges

USE ONLY standard varieties of proven value for commercial planting, and by all means plant on your soil the variety and root stock best adapted to it. You may be guided largely by the success of others in your immediate neighborhood as to what variety and what root stock to plant, provided soil conditions in your land compare favorably with those in the other groves. Choose your varieties because of the conditions favoring them where you are going to plant. Do not plant a Parson Brown or a Valencia orange with the idea of getting the same amount for it that

you have read of some one else getting from a grove perhaps 100 to 200 miles away from the point you are going to plant. If you will plant a variety that is adapted to your local conditions your success will measure up with the success of some one else at some other place who has planted other varieties for the same purpose.

Elsewhere in this catalog this subject is treated fully. Be sure and read this information thoroughly before deciding as to what you will plant, or ask us and let us give you the benefit of our experience.

Early Oranges

BEFORE the 1925 Florida legislature enacted a law prohibiting the shipment of early season immature and green fruit, which the 1927 legislature made more effective with additional legal teeth, little attention was paid to the production of early-ripening fruit in this state. The incentive to produce good early season fruit was lacking because before that time any kind of fruit could be colored and sold, to the detriment of general market conditions.

Now that all round oranges and grapefruit must pass a maturity test made by State Officials before they can be shipped prior to December 1st of each year, growers have woken up to the fact that Florida is producing but very little honest early fruit. The small quantity of early fruit which has been shipped

from the state since the acid test has been required proves that plantings of oranges and grapefruit with genuine early-ripening habits are very limited. Consequently, during the seasons since the new green fruit law has been enforced, the market demand for early fruit has become greater than ever before, and this class of fruit is now returning some of the best prices of the season.

Many growers have made the mistake of planting early oranges in localities not suited to them and have been disappointed when their fruit did not pass the acid test early in the season. Early oranges are best adapted to the heavier soils in the northern part of Florida's citrus belt and are not so well suited to the southern section. This should be born in mind when planting all varieties of early oranges.

Sales Record on Conners' Early Improved Seedless Oranges

Form No. 148

ACCOUNT SALES

FLORIDA CITRUS EXCHANGE, TAMPA

FLORIDA CITRUS EXCHANGE

Mrs. R. W. Hunt Grower Mt. Dora Citrus Growers Association
 Sale at New York Agency Date Sold Nov. 11 1925
 For Highland Sub-Exchange Remitted Nov. 13 1925

F. C. E. No. 537 Car No. 61984 Initial W. F. E. Sold to At Auction
 Sub-Ex. No. Ass'n No. 6 Date of Arrival 11/11/25 At New York

No. BOXES	BRANDS	VARIETY	PRICE	AMOUNT	Description of Check Received
145	Brights	Conner Seedless Orgs.		\$1255 .40	Date
123	Golden	Conner Seedless Orgs.		1008 .75	No.
90	Choice	Conner Seedless Orgs.		646 .35	Amount
2	Refused				Bank
360					Issued by
	LESS DISCOUNT	FOR OFF SIZES			
				\$2910 .50	Decay (Each Grade) Sound
					Remarks
CREDITS			GROSS		
Regular Freight	@ 92¢		331 .20		
Excess Freight					
Demurrage					
Refrigeration	Full Tank		70 .00		
Extra Ice					
Cartage					
Labor					
Auction Charges			62 .65		
				\$ 463 .85	
Sub-Exchange Charges			TOTAL CREDITS	\$2446 .65	
Less Retain F. C. Exchange @ 16 per box			NET		
			57 .60		
Less Retain Sub-Exchange @ 2 per box			7 .20		
				64 .80	
			TOTAL CREDITS	\$2381 .85	
Association Charges			NET		
Coloring	1¢		3 .90		
Picking Charges	12 per box		43 .20		
Hauling Charges	8 per box		28 .80		
Packing Charges	70 per box		252 .00		
Gov. Inspection	8 per box		28 .80	363 .60	
Gov. Inspection	2		7 .20	2018 .25	
Check No. to Balance				80 .73	
				\$ 1937 .52	

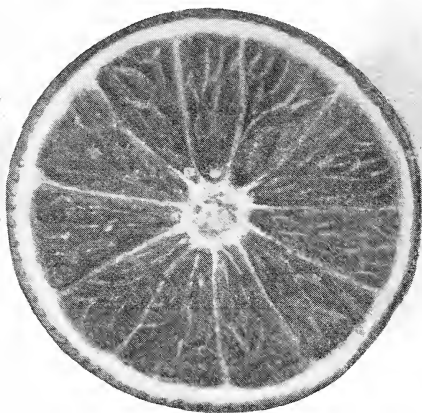
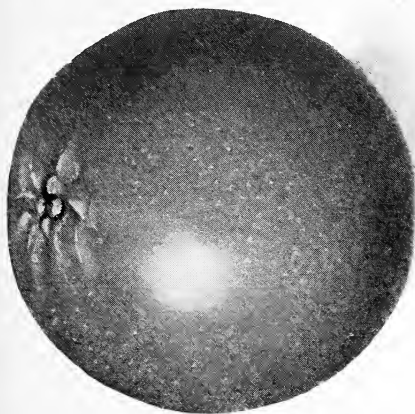
Emerson
 District Manager

J. G. Murrell
 Sub-Ex. Manager
 Claim for 2 Boxes

NET AVERAGE PER BOX \$5.38

James Simpson
 Agr. and Sec'y

This account sales report shows the profits which are being made on the Conner's Early Improved Seedless Orange. This sale netted the grower \$5.38 per box on the tree. Note the date of early shipment, majority of first and second grades, with no penalization for off-sizes. This car was approved for shipment under the acid test by the government inspection service. Does this not prove that the Conner's Seedless has demonstrated its value?



CONNER'S SEEDLESS ORANGE—FROM A PAINTING FURNISHED BY THE BUREAU OF POMOLOGY, WASHINGTON, D. C.

Conner's Early Improved Seedless Orange

THE OCKLAWAHA NURSERIES introduced the Conner's Early Seedless orange in 1904. Since that time we have been working towards its improvement, which has been brought about by fruit stem selections of bud-wood from exceptional parent trees. In this work, we considered early-ripening season, seedlessness, uniformity, quality and quantity of production. We offer the Conner's Early Improved Seedless orange with our full endorsement that it is the safest early and only seedless orange to plant.

It is the most uniformly seedless orange that has ever been propagated from this type in Florida. Its ripening season, at which time sweetness is obtained, is through the month of October. This variety compares favorably with the Parson Brown in this respect, and shows color about two weeks earlier than does the Parson Brown. However, the Conner's Seedless will hang on the tree in good condition without drying out as late as the month of February.

In outer appearance, the Conner's Seedless somewhat resembles the Pineapple orange. It has the added advantage

over the Pineapple of ripening earlier and hanging on the trees as late as the Pineapple. It takes on the deep color of the Pineapple about the latter part of December, and by its outer appearance is often mistaken for the latter variety.

It does not come into full production as early as some varieties, but begins bearing heavily when five or six years old, after which it will bear regular, heavy crops of fruit of an exceedingly fine quality and flavor. The color is from orange to reddish in tinge like the Pineapple, which makes it attractive, and which will sell it at good prices early in the season. The growth of the tree is more rapid than that of most other varieties; it is upright, well formed, thrifty and vigorous, and carries its heavy crop of fruit in good condition. It is more hardy than most types, and information that we have had on it, where it has been planted in cold locations, indicates that it will go more safely through a low temperature than any other variety of Round oranges. This variety should be planted in large quantities where early fruit is desired.

UNITED STATES DEPARTMENT OF
AGRICULTURE
BUREAU OF PLANT INDUSTRY
WASHINGTON, D. C.

Mr. O. W. Conner,
Tangerine, Florida
Dear Sir:

I am just in receipt of yours of the 18th instant and also two specimens of your seedless orange. These were forwarded to me by Prot. Webber of this Department. After cutting one specimen I find that it is truly seedless, very juicy and sweet, and all things considered, a very fine orange. It just suits my taste.

Thanking you for the privilege of examining this fruit, I am

Yours very truly,

G. B. BRACKETT,

Pomologist.

Description of Conner's Seedless Orange, by Bureau of Pomology at Washington, D. C.: "Nearly spherical, slightly oval, size medium (200 to 150 to the crate), surface of peel smooth,

with slight depression over largest glands. Skin $\frac{1}{8}$ inch thick; color, reddish orange to orange. Axis solid. Very juicy, heavy and solid. Aromatic, high flavored, sprightly fruit."

Parson Brown. The Parson Brown orange originated from the seedling strain. It is a distinct variation from the usual type, however, because of its early season of maturity and of its finer quality. Usually, during the month of October, this orange takes on the same degree of sweetness that the ordinary seedling orange has in December. While it does not show color in most localities until the middle to the last of November, it is palatable and of fairly good flavor, 4 to 6 weeks earlier.

The Parson Brown is a much abused variety because it has been budded and rebudded for over 25 years from trees of all kinds and manner of description. It has even been budded in nursery form, and sold under its true name, from seedling trees originating from the original Parson Brown orange, which is no more true to type than any other seedling would be.

We have received letter after letter during the past few years, telling us of Parson Brown orange trees purchased from other nurseries that were nothing more or less than seedlings which were not producing any fruit at all or producing nothing but large, punky specimens, unfit for market purposes. We have advised such parties, as a rule, to cut their trees down and bud them over to either the genuine Parson Brown or to some other type better suited to their soil and location.

In our own propagations, which were made from selected trees in the Carney grove, at Lake Weir, we have found the Parson Brown to be a strictly first-class fruit, producing heavy crops of smooth, fine texture, high quality fruit. These trees have been especially satisfactory to us, and from these trees our bud selection has been made for all trees of the Parson Brown we have propagated in our nursery.



ONE BRANCH OF CONNER'S SEEDLESS ORANGE TREE.
SEVERAL YEARS AGO WE PROMISED YOU PERFECTION
IN THIS FINE ORANGE. HERE IT IS

Mid-Season Varieties

THE TERM "midseason" is used for all fruit marketed during December, January and February, and generally applies to seedling oranges and unnamed sorts, or local varieties, that ripen during that period. As to value, they are generally below those standard varieties which have developed in the past 15 years.

Certain known varieties of the most attractive appearance and uniform character have standardized themselves, and head and shoulders above them all are the Pineapple and Ruby Blood oranges. It is now absolutely useless to plant the Majorca, Mediterranean Sweet, and a dozen or more of other midseason types, because the market demands such varieties as the Pineapple and Ruby Blood at a much higher price due to their finer appearance and eating quality.

Pineapple Orange.

The Pineapple orange is, without doubt, a hybrid of the seedling type, and originated in Florida the latter part of the nineteenth century. When its fruit is at its best and thoroughly ripe, ready to go to market, with all its finer characteristics, there is no finer orange grown.

The Pineapple orange is decidedly late mid-season in ripening, its fruit being at its best from the middle of January until the middle of February. It is an extremely heavy fruiter; produces fruit, well distributed, over the entire surface of the tree; is medium in size, with a peel smooth as glass, and a shiny, brilliant, reddish

tinge; and is usually slightly oblong in shape. The fruit has such an aroma and such a delightful odor that the grove in which the true Pineapple orange is planted is as highly scented when the fruit is ripe as it is when the trees are in full bloom. This is one decided characteristic of the Pineapple orange.

As soon as fully ripe, the Pineapple orange has a tendency to drop to the ground, therefore this fruit should be gathered as soon after the 15th of January as possible to prevent loss in this manner. Do not make the mistake of gathering your Pineapple oranges in the early part of December, or the latter part of November, when they will begin to show the same degree of color that earlier types of fruit will show. The Pineapple, when at its best, is very highly colored. The coloring process of the peel starts early in the season, and finishes usually during the last four weeks when it is ripening.

We have found in 25 years of propagation of Pineapple orange that it is more susceptible to



OKLAWAHA NURSERIES PINEAPPLE ORANGE TREE
THREE YEARS OLD

variations and mutations with the old seedling type than any other standard type with which we have experimented. In checking results of propagations from nursery trees and young groves, we have found that in three or four generations from the original tree we had only 65 trees out of 100 that were producing anything like the type. In checking still further, we found that after 11 years of propagation of this kind that only 25 per cent of the trees were producing anything near true to type.

We have noted with much interest our recent propagations of the Pineapple orange, and their behavior when brought into check with other methods of propagation, practiced for the sake of experiment at our own plant, and practiced for commercial purposes in several other places in the state. In no case have we been able to find any propagation work that gives the same high degree of success in producing a strictly first-grade Pineapple orange as we are able to produce from OCKLAWAHA NURSERIES trees, propagated under our method. We can offer you today nursery stock of this variety which will produce practically 100 per cent true to one type of fruit, under a proper method of fertilizing, cultivation and spraying, such as practiced in our own groves.

We will be glad, at any time during the fruit-ripening season of the Pineapple orange, to take visitors to our plant through our Pineapple orange groves where trees are planted in check with other than OCKLAWAHA NURSERIES propagations, and let the planter judge for himself the value of the work we are doing with this variety.

It is certainly true of the Pineapple orange that "NO TREE IS A FIRST-CLASS TREE UNLESS BUDDED FROM A BEARING TREE OF A KNOWN QUALITY AND QUANTITY OF PRODUCTION."

Ruby Blood. The Ruby orange, if properly budded, will always show blood markings from December until the end of its season, which is about the 15th of March. The riper the fruit gets the more profuse the blood markings, until the interior becomes dark ruby in color. The flavor is exquisite, slightly acid, but so well blended with the sweet that there is no more delicious orange produced than the Ruby Blood. The character of this type has been seriously interfered with by improper propagation methods, and the nurserymen who have propagated it have been responsible, because they did not know of the necessity of obtaining budwood true to type from bearing trees that were producing the proper color of flesh and uniform shape of fruit that should be represented by this type. Hence, in many groves of Ruby oranges, a large number of the trees show little or no blood markings, and can not be distinguished by the customer from any ordinary type of fruit. We have made a specialty of budding all our Ruby Bloods direct from trees producing an extremely fine grade of fruit, showing profuse blood markings, and any trees you plant of this variety from our nursery should give entire satisfaction when they come into bearing.

The Ruby is of medium size, of high color, and when fully ripe shows the blush of the inside color on the outside of the peel. Color of peel develops early in December, but the fruit should not be shipped until blood markings show.





1
NO. 1 PERSIAN LIME
2
NO. 2 VILLA FRANCA LEMON
3
NO. 3 SATSUMA ORANGE

4
NO. 4 TANGERINE
5
NO. 5 KUMQUAT
6
NO. 6 MANDARIN

The "Kid Glove" or Mandarin Family

WE HAVE in these a distinct group of citrus fruits, all showing similarity by their general form, habits of growth, and their highly flavored, spicy, aromatic fruits with loosely adhering rind, which may be removed with the fingers and the fruit eaten from the hand in sections with great ease. The earliest on this list is Satsuma, which ripens from October 1st to November 15th. This is also the hardiest variety of citrus known. Next in season is Mandarin, in November and December. Then comes Tangerine (Dancy) in December, January and February, and King in March and April. All do well on light or heavy soil.

Satsuma. (Oonshiu Kii Seedless). Medium in size, flattened in shape, color yellow, somewhat inclined to color of the tangerine, rind and segments part freely, flesh fine-grained, tender juicy, sweet and delicious, entirely seedless, and one of the earliest varieties known. Fruit always ripe in November and is of good quality in early October. Tree thornless, of distinct habits, and very prolific; bears young, usually fruits when bud is one year old in nursery. Well adapted to all classes of soil. It is the most hardy of all edible citrus fruits, and we strongly recommend it for use on your dining table and for market purposes. This is a most valuable sort. On pine land, in central and southern Florida, use lemon stock only.

Mandarin. Medium in size, flattened, deep yellow in color, skin very thin and of fine texture.

Skin and segments loosely adherent, flesh rather dark orange in color, spicy, aromatic and rich in flavor. Tree vigorous, compact in growth, bears young and is very prolific. This variety is largely planted in Louisiana and has always been a good one for Florida. Does well on all classes of soils where citrus fruits are grown, and we consider it a profitable variety. Not a dwarf.

King. Fruit very large and flattened and with loosely adhering rind and segments like all Mandarin varieties. Color orange-red, skin rough, but general appearance fine. Flesh juicy, meaty and most agreeable, highly aromatic flavor, dark and rich. Season April, May and June. This variety succeeds best when propagated on sour orange stock and planted in good quality hammock lands. However, it has borne well for us propagated on lemon stock and planted on high pine land; in fact, we might say that it has proven to be very prolific, and retains its good qualities long after ripening, even on lemon stock. Season late. King oranges have sold at such very high prices in the auction markets that it has been exceedingly profitable to grow them. They are usually packed in half boxes and it is not unusual for them to sell for \$7 or \$8 a full box.

Tangerine (Dancy). We believe we have the best Tangerine strain grown. It originated from Magnolia Grove, owned by F. D. Waite, at Belleview, Florida. Fruit large in size, flat in shape, each segment well marked from the outside, skin smooth, deep red in color, of fine texture, nearly always entirely free from any effect from the attack of rust mite. The Tangerine is too well known to need more than a brief description. Skin separates freely from the flesh, which is juicy, aromatic and spicy in flavor. Quality excellent and no orchard is complete without a good supply of this variety.

Valencia Late Oranges

THE RECORDS of all marketing agencies handling Florida citrus fruits have proven conclusively that Valencia Late oranges have averaged a higher price than any other late orange shipped out of this state. There has been no decrease in prices of Valencias, but rather a steady increase. In the meantime, the output of Florida Valencias has been more than quadrupled during the past ten years.

Our strain of Valencias has been selected after comparative and exhaustive tests with all other late varieties. It has been pronounced by high authorities to be of very excellent quality and practically seedless, having an average of about four seeds.

The Florida Valencia is a prime favorite with all fruit dealers because of its splendid keeping qualities, its unexcelled flavor and its general popularity among consumers. Therefore, this variety has, by its own merit, standardized itself in all markets of the United States and has never been produced in sufficient supply to fill the demand. The Valencia orange matures and ripens

in April, May and June, when there is no other good citrus fruit to compete with it in the markets, and right then the shipper of OCKLAWAHA NURSERIES pedigreed Valencias will get the biggest prices of the season. Always plant Valencias on land of good quality, with proper root stock, and you will get better results than with any other late variety.

Tangelo, Thornton (early). This variety is the result of a cross, made by the Department of Agriculture, of the tangerine and grapefruit. The fruit differs in every respect from the late variety, the Sampson. The peel of the Thornton Tangelo is rough, like the tangerine, with the yellow color of the grapefruit, easily removed from the flesh which is also pale, with loose segments and comparatively no rag, and only an occasional seed. It is truly a "Kid Glove" fruit, the flavor being a new and pleasant combination of the tangerine and the grapefruit. It is especially recommended for home orchards. It comes into maturity December 1st.

Tangelo, Sampson (late). This is a comparatively new variety of citrus fruit, being a



VALENCIA LATE ORANGE—UNIFORM SIZE, BRIGHT AND GLOSSY. QUALITY FRUIT FROM PEDIGREED TREES. SEASON APRIL TO JULY

combination of the tangerine and the pomelo or grapefruit, as the name indicates. The fruit is slightly larger than a sweet orange, with peel of reddish tinge of the tangerine, and the sprightly sub-acid fruit juice of the grapefruit and tangerine, combined with the pleasant flavor of both. The Tangelo is one of the hardy hybrids sent out

by the United States government a few years ago, and has won a place among citrus fruits by its appeal to many consumers who wanted "something different." Every grove should contain trees of the Tangelo, as it is destined to become one of the most profitable fruits grown. It grows rapidly and bears crops two years after planting.

Lemons

SPECIAL methods of cultivation, pruning and curing are necessary in the production of lemons for marketing purposes. There are large areas of land in Florida well adapted to the production of lemons, but unless they are properly looked after in every detail they are best left alone. However, no home grove is complete without at least two lemon trees, and those offered below are the best we know of for this climate.

Everbearing. Fruit large, pointed at both ends, skin thick and not smooth. Fruit of fine flavor and the best for house use. Trees do not grow very large, heads low like a Citron. It bears every month in the year, and there is never a time when fruit cannot be gathered. Everybody should have one or two trees.

Villa Franca. Fruit medium-size, rind smooth, thin and sweet. A very juicy, acid fruit of fine appearance. This has long been a leading variety, and we consider it the best either for general planting or home use.

Ponderosa. Extremely large; fruit weighs from 20 to 36 ounces. Very juicy, acid strong and of excellent flavor; genuine lemon taste. Rind thin for such large fruits. Tree good grower and bears

very young and heavily. Quite unique and valuable.



VILLA FRANCA LEMONS

To Cure Lemons for Home Use. Clip 100 matured lemons from tree, get a half barrel of perfectly dry sawdust and place a layer two inches thick of sawdust in bottom of barrel. Then place a layer of lemons on this so they will not touch inside of barrel and so they will not touch each other. Cover this with a layer of sawdust two inches deep; then place another layer of lemons and sawdust until all are placed. In a short time all will cure and color well and be far superior to imported lemons. This can be done at practically no cost. Try it.

Limes

THE production of limes is now one of Florida's best paying industries. For many years the only limes obtained here were from the keys along the southern coast, but the demand is so great at such good prices that commercial groves have been planted, whose future is already assured. During the last few years limes have sold in Southern markets at \$10 to \$15 per barrel, and there has not at any time been enough fruit in supply

to meet half the demand. In the propagation of limes we have gone about it in a way that will positively be an advantage to our customers. Instead of growing them from seedlings, as is usually done in most nurseries, we have budded from the trees producing the largest and best fruit, into the rough lemon stock, the Mexican and Seedless Persian varieties. Our trees, at two years old, will produce from 200 to 500 limes of good size and

the very best quality. Limes grow fast, and to large size trees very quickly. At five or six years old they will produce a barrel to the tree. The proper distance to plant is 18 x 25 feet.

Seedless Persian. Tree is a vigorous, strong, upright grower, few thorns, beautiful foliage, of light green color. Fruit 2½ inches long and 2 inches diameter; thin skin, no seeds, abundance of juice, finest flavor, and valuable for home use from June till January. Fine fruit for market.

Common Florida (Mexican). The fruit mostly used for market purposes. Trees grow large in size, are very prolific, commencing to bear second year. Fruit nearly round, bright yellow in color, very acid, of a distinct flavor. Heavy and juicy. All our trees are budded from bearing trees.

Tabiti (Seedless). Fruit medium to large in size, oblong, bright yellow color, fine aroma, and delicious flavor; heavy bearing, vigorous, beautifully - shaped trees, similar to Persian.

Kumquats

THIS VARIETY we propagate only on Trough lemon and trifoliata stocks. The fruit is becoming more popular each year, and as a commercial product is attracting a great deal of attention in Eastern and Northern markets, the prices obtained being such as to warrant its being planted in large quantities. Aside from its commercial value, it is highly ornamental, and as a lawn or border plant its beauty is remarkable. We have Kumquat trees in all sizes from small one year up to four year buds, fruiting heavily.

fruit makes a delicious marmalade and is splendid to eat in its fresh state. Does not require peeling, as the rind is a part of the fruit.

Nagomi (Oblong). Size of fruit about one and one-half inches long by about three-fourths inch in diameter, deep orange yellow in color, peel delicate in flavor, sweet and aromatic, and flesh agreeably acid. Trees grow in shrub form, low, compact heads, leaves willowy, branches slender and entirely thornless. A most ornamental tree when loaded with fruit, as they always are, at two years from the bud. We recommend this tree for general planting on a small scale and particularly for yard decoration. The



NAGAMI KUMQUAT

Always Remember—"No tree is a first-class tree unless budded from a bearing tree of known quality and quantity of production."



CONNER'S EARLY IMPROVED PROLIFIC GRAPEFRUIT THREE-YEARS OLD

The Earliest of All Grapefruit

THIS variety has been endorsed by hundreds of Florida growers as the earliest and the best producer of any grapefruit that has come under their observation. Most of the trees we have offered of this variety have been purchased by growers of long experience. This variety may be depended upon to ripen its fruit during the months of September and October, and have it not only well-colored, but possessing all the maturity and flavor that the midseason varieties will show in January and February. Conner's Early Improved Prolific grapefruit is a sport from the straight Conner Prolific variety introduced by the OCKLAWAHA NURSERIES in 1900.

This variety begins to color early in September, and by the last of September is generally fully-colored, and of full size and maturity. It is the first grapefruit to pass the acid test wherever planted. The fruit, if left on the tree, will

hold its fine condition until the early summer and every year a number of specimens have been left in our groves, which remained there in good condition until the next crop of fruit began to ripen. The exceptional value of this type lies in the fact that it is extra early, of extremely handsome appearance, of fine color, of the proper size, and can be shipped at a time when the markets are bare of grapefruit, and sold at the highest price that will obtain through any season in which grapefruit is marketed.

We recommend the planting of this variety in preference to any other type, for planters may depend upon getting a wonderful income from these trees when they come into bearing. This variety has shown itself capable of being a repeater, and unlike other types of grapefruit will not have its off years of fruiting.

It has all the good qualities of the Dun-



CONNER'S EARLY IMPROVED PROLIFIC GRAPEFRUIT. EVERY ONE ABSOLUTELY PERFECT AND A MONTH EARLIER THAN ITS PARENT

can, Walters and other early and mid-season varieties. Besides, it is grown on long single stems, very handsome in appearance, uniform in size and color, and possesses an individual delicious flavor. Of all our experiments conducted over a

period of 30 years, this result is the most satisfactory. Note sales account record on Page 41.

Marsh Seedless Grapefruit. The trees we offer of this variety have been budded from fruit selections, and the result of planting these trees should be to produce for you a fruit that will run 54, 64, 70 and 80 to the box.

These sizes are the most desirable at the time the Marsh Seedless goes to market in March and April. The selections of budwood we have made have been for the purpose of producing a fruit flattened in shape, nearly seedless, heavy in juice, and of good, slightly sub-acid flavor, with smooth, thin skin of good color. This is generally a prolific variety, bearing moderately heavy crops every year, whose chief attraction is its seedless fruit, and medium to small sizes and medium lateness of season. All of the characteristics combine to make a fruit which will bring a good price in the markets. It should be planted for commercial purposes generally for shipments to be made late in the season. Our propagation work with this variety has been very carefully done, and the selections of budwood have been made from nothing but proven bearing trees and type of fruit.



CONNER'S EARLY IMPROVED PROLIFIC GRAPEFRUIT PARENT TREES

Sales Record on Conners' Early Improved Prolific Grapefruit

Form 37

LOT No. 42

SALE No. 9

AMERICAN FRUIT GROWERS INC.

SALES AGENTS AND DISTRIBUTORS
FRUITS AND VEGETABLES

ORLANDO, FLORIDA

October 24, 1925

SOLD FOR ACCOUNT OF

Ooklawaha Nurseries Co.
Lake Jem, Fla.

CAR No. 28591

PACKED AT Lake Jem

GRAPEFRUIT

CONNERS' EARLY PROLIFIC.

237 Blue Goose Tip Top @ \$4.50
148 Favorite-Goldens @ 4.00

1066.50
592.00

385 Less 50¢ 14 - 36s-46s-96s

1658.50
7.00

1651.50

FREIGHT

f.o.b.

REFRIGERATION

DEMURRAGE

AUCTION CHARGE

CARTAGE AND LABOR

A. F. G. SELLING CHARGE

77.00

NET PROCEEDS

Inspection Stamp

5.78

1574.50

PACKING

308.00

FREIGHT SWITCHING & Coloring

19.25

BRANDING

19.25

PICKING AND HAULING

21.14

373.42

NET RETURNS

1201.08

NET PER BOX \$3.12

Houston, Texas

E. AND O. E.

LAWTON PRESS, ORLANDO

This sales record shows the shipment of a carload of Conner's Early Improved Prolific Grapefruit in October which netted us \$3.12 per box on the tree. Note that all fruit is of first and second grades, with less than 5 per cent off-sizes. This fruit passed the government acid test for maturity on October 8th.

Are Our Prices Higher Than Values Given?

PLEASE READ CAREFULLY

You Always Pay for What You Get According to Value.

MANY customers have told us that our prices are higher than those asked by other nurseries for trees described as ours are, size for size, age for age and grade for grade. This is true, likely enough, but Ocklawaha pedigreed trees are worth the difference many times over. Certainly they cost more to produce than trees propagated in the ordinary way. Do not forget that it is possible to produce from any method of propagation a tree that has a good caliper, splendid root system and vigorous healthy top, but it is only when the proper strain is budded into your trees that you can make all of the trees planted profitable, heavy producers of first quality fruit.

Why It Costs More to Grow Pedigreed Trees. When you get an OCKLAHAHA NURSERIES tree you get a tree whose budwood has been chosen from the parent tree with the same exacting care that the breeder of a high class milch cow would exercise in breeding for his dairy herd. Our trees are just as certain to give satisfactory results under this method of breeding as the milch cow produced by careful breeding for the high-producing dairy herd.

Do not overlook the significant fact that fruit growers all over the United States, who have been purchasing nursery stock to produce apples, peaches, pears and other fruits, have always found that a large number of their trees simply would not bear fruit true to type for which they were planted. Nor did anything like the full number of trees planted give satisfactory results when the trees were old enough to bear, so that it has always been necessary to rebud or regraft these deciduous fruit trees in order to obtain a profit-producing orchard.

How OCKLAHAHA NURSERIES Trees Cost You Less and Earn More. Neither must we overlook the fact that in many Florida and California citrus groves planted long enough to come into bearing, growers are finding it necessary to rebud their trees by the thousand in order to weed out non-bearing trees or trees producing unsatisfactory fruit. This work must be done now after all expenses have been met by the grower in bringing his trees to a bearing stage, when they should have been satisfactory in the first place to the extent of fully 85 per cent of all trees planted.

OCKLAHAHA NURSERIES trees may cost you a few cents more per tree now—perhaps \$10 to \$25 per acre more—but this item of additional expense is immaterial when you consider that practically every OCKLAHAHA NURSERIES tree planted will come into bearing, producing heavy crops equal in quality to the manner in which you cultivate and to the extent that your soil is suitable for growing such trees.

Discounts. The prices at which OCKLAHAHA NURSERIES trees are offered are as low as our trees can be grown with proper methods of culture, fertilization, bud selection and general supervision. The tree offered at a lower price and for which is claimed the same good points that OCKLAHAHA NURSERIES trees possess, may or may not have these good points. Consider well the advantages offered by our superior method of propagation before you decide to buy lower priced trees. Do not let a few cents per tree additional cost stand in the way of your possessing a perfect grove producing perfect fruit of each variety you plant. We may charge you a little more for trees, but not half as much as they are worth to you from that standpoint. All prices are for trees f.o.b. our shipping point.

Planting Service

On large orders we are prepared to deliver and plant trees anywhere in Florida. With our complete equipment, trained men and experience in planting trees, we can always save the customer a considerable amount on this item. Trees are delivered on our large trucks direct from the nursery to grove site, thus avoiding any delay in transit and insuring their arrival in good order. Trees set by us are guaranteed to live and any trees not showing first growth will be replaced by us—barring, of course, uncontrollable forces of the elements.

Advice and Recommendation

Where a purchaser is in doubt and desires advice regarding soils, root stocks, location, adaptability of particular tracts of land, etc., we are always ready and willing to render our opinions on these matters and if necessary we will send one of our field representatives, experienced men in this line, to actually view the property before or after it is purchased.

Our opinions are always unbiased as we have no other interests than the welfare of OCKLAWAHA NURSERIES groves wherever they are planted.

Terms and Methods of Business

LOCATION OF NURSERIES, GROVES AND OFFICE, LAKE JEM, FLORIDA: On the County Line between Orange and Lake Counties, 25 miles Northwest of Orlando.

RAILROAD FACILITIES: Seaboard Air Line at Lake Jem and Atlantic Coast Line at Mount Dora.

TELEGRAPH: Ocklawaha Nurseries, Mount Dora, Florida.

TELEPHONE: Call Long Distance, ask for Ocklawaha Nurseries, Florida, or Mount Dora No. 21.

BY AUTO: Those who wish to reach us by auto can conveniently do so as good roads lead to Ocklawaha Nurseries from all directions. Turn West off State Road Number two (No. 2), three (3) miles South of Mount Dora or East off State Road number eight (No. 8), three (3) miles South of Tavares.

TRADE INVITED: We cordially invite the trade to visit us at all times and we welcome their inspection of our nurseries and groves.

RESERVATION OF TREES: Trees should be reserved in advance of the shipping season. This is the most satisfactory method as many times we are sold out of the choicest sizes and varieties before the shipping season opens. On orders

of this kind, a deposit of 20 per cent in advance is required with the order, balance due with shipping instructions. Our responsibility to deliver ceases in the event frost, fire drouth or any other action of the elements beyond our control destroys our stock.

ORDERS FOR IMMEDIATE SHIPMENT: On orders for immediate shipment, cash with the order is required.

TERMS: Where terms are required we are always willing to extend credit to those entitled to it. However, unless the purchaser has an account with us we are compelled to make the customary investigation, which of course, takes time and delays shipment. Time payments will be arranged where the proper security can be given.

ORDERING TREES: For your convenience, you will find attached two (2) order blanks in the back of this book. Others will be forwarded upon application. We urge, whenever possible, that these blanks be used, giving full shipping instructions, varieties, sizes and root stock.

OUR RESPONSIBILITY: Our responsibility for damage in transit ceases when we deliver to the forwarding companies.

We agree, however, to give the purchaser every assistance in our power in recovery of loss in such cases. All transportation is at the purchaser's expense.

TRUCK DELIVERY: This method is probably the most satisfactory and safest means of handling large orders in Florida. Further information as to this subject will be found under "Planting Service" on page 43.

OUR GUARANTEE: Our guarantee is that all trees sold by us are fresh dug, properly packed, true to name, healthy, thrifty and well-rooted on the stock ordered. Our liability to the foregoing applies only to the extent of the purchase price.

CLAIMS: All claims should be filed within ten (10) days after receipt of shipment.

PACKING: No better work in citrus tree packing is done in the state than we do in our large, up-to-date packing house. Trees packed in full size cases may always be expected to arrive at destination in good order and to remain moist for a month after packing.

GRADING AND INSPECTION: At time of shipment all trees will be properly dug, and before packing thoroughly inspected. When, in our opinion, a tree has an insufficient root system, it will be thrown out and the customer furnished with a tree that is first-class in every respect. The fact that a state inspector, working

under the direction of the State Plant Board, inspects every tree in our nursery is a warranty sufficient to all exigencies that none but healthy trees, free of insect pests, will be included in any shipment to our customers

AGENTS: Do not place orders with any one purporting to be our agent unless he can show you proper credentials from us.

Agents representing this company have been chosen with a view to supplying our customers the best possible service in the various localities in which they serve us. These men are well informed in a local, as well as in a general way, on all subjects pertaining to citrus fruit culture and they can give to our customers the benefit of the very best advice relating to their grove planting, when such advice is required. If you are not in touch with our agent, an application to this office will promptly bring you the desired information.

By all means, get in touch with our agents wherever possible to do so, and get the benefit of their help in building your grove. These men may always be depended upon to come to you with proper credentials, which you should demand before placing business in their hands. All properly accredited agents are authorized to transact business for us.

Address all communications and make all remittances to

Ocklawaha Nurseries

Lake Jew, Florida



ORDER SHEET

Before MAKING OUT YOUR ORDER, read carefully remarks under "Terms and Methods of Business." Our customers will oblige us by using this sheet in ordering. Extra order sheets furnished on application.

Remittances can be made by Bank Draft, Money Order, Prepaid Express, or Registered Letter.

Please write in the quantity, full name of variety, size and price. Any necessary correspondence should be written on a separate sheet.


 We substitute, unless instructed to the contrary, but never until the varieties or sizes ordered are exhausted; and in all cases cheerfully refund the money instead of substituting, if so requested.


Do you wish us to substitute to the best of our judgment in case any varieties or sizes ordered should be exhausted? Write "YES" or "NO." _____

OCKLAWAHA NURSERIES, INC.
LAKE JEM, FLORIDA

Date _____ 19____

For amount enclosed, \$....., send me by
the Trees and Plants designated below: Write here "Freight," "Express," "Mail," or "Use your discretion."

LY  This space for full shipping directions, without reference to P. O. address of purchaser.

NAME AND ADDRESS OF PURCHASER  This space for name and P. O. address of purchaser, without reference to destination of shipment. Ladies please give title, Miss or Mrs.

Name _____

LA Name _____

Place (Express or Freight Station)

Street and No. }
or P. O. Box } -----

Via _____

Post Office

County _____ State _____

County ----- State -----

[illegible]


All claims for shortage or damage must be made immediately upon receipt of goods

ORDER SHEET

Before MAKING OUT YOUR ORDER, read carefully remarks under "Terms and Methods of Business." Our customers will oblige us by using this sheet in ordering. Extra order sheets furnished on application.

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Name

NAME _____

Place (Express or Freight Station)

F Street and No. }
R or P. O. Box } -----

Via

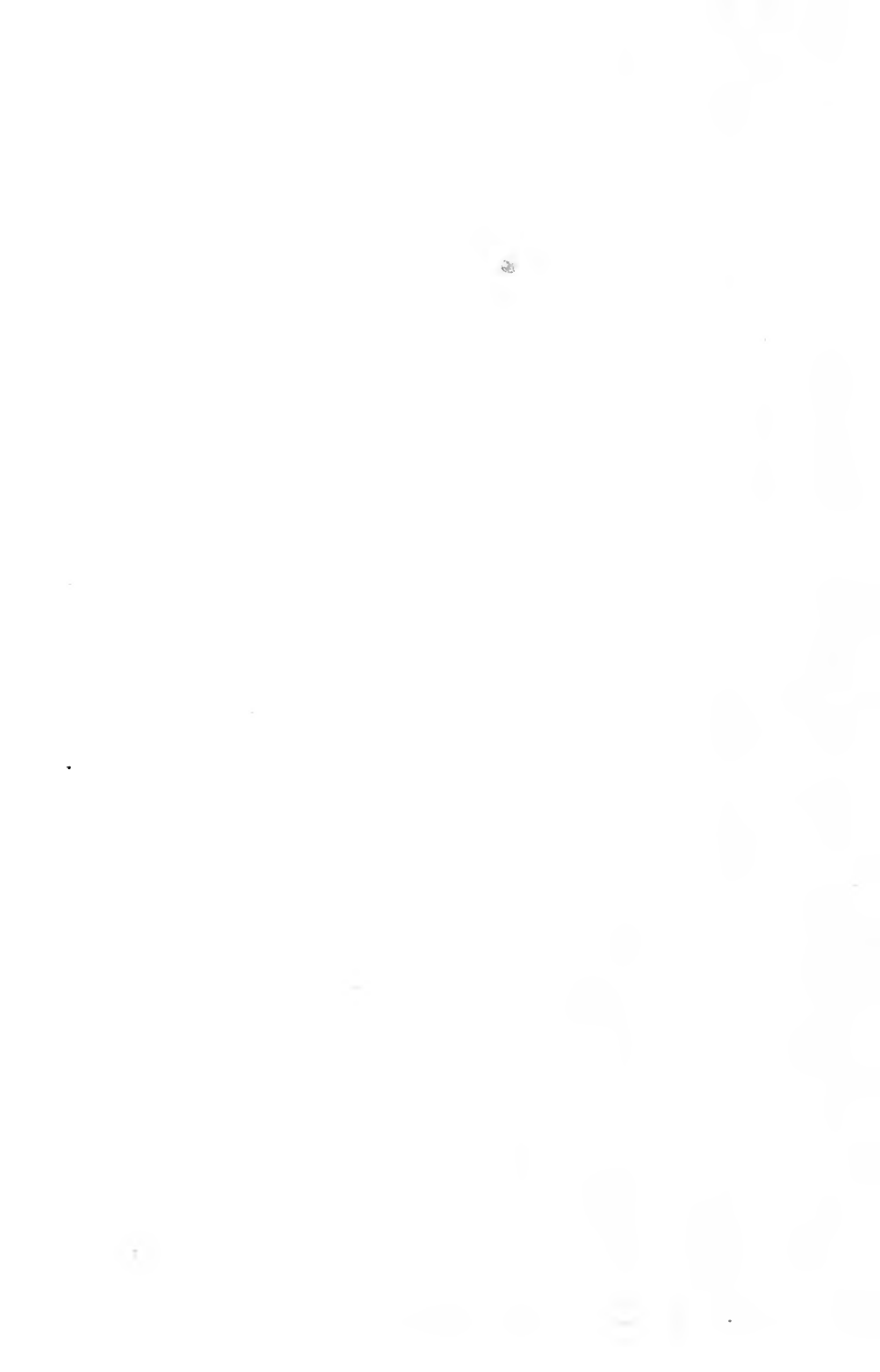
Post Office

County _____ State _____

County State

[illegible]

All claims for shortage or damage must be made immediately upon receipt of goods



SAVE THIS BOOK

W^{HEN} you have finished reading this book, put it away in a safe place so that you can later refer to it again. You will have many occasions to do so, while developing your grove.



Ocklawaha Nurseries, Inc.

LAKE JEM, FLORIDA